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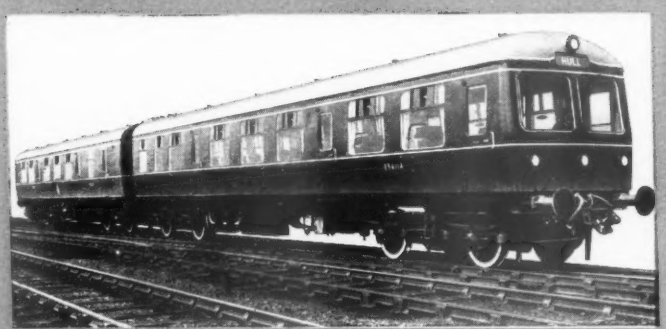

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CONTENTS

	PAGE
Editorial Notes	669
One Commissioner for W.A.G.R.	671
Transport and the Common Weal	671
Gauge Conversion in Central Australia	672
Canadian Railways and the St. Lawrence	673
Letters to the Editor	674
The Scrap Heap	675
Overseas Railway Affairs	676
Training in Diesel Operation for Senior Staff	678
St. Pancras Terminus Re-Signalling, L.M.R.	679
Nine Years of American Railroading	683
Halsskov-Knudshoved Ferry Route	684
Personal	685
New Equipment and Processes	688
News Articles	690
Contracts and Tenders	693
Notes and News	693
Railway Stock Market and Official Notices	696

Progress in 50-Cycle Electrification

IT is only 21 months since the British Transport Commission published its decision to adopt the 25,000-V., 50-cycle system for future electrification in Britain, except for extensions to the Southern Region third-rail d.c. network, yet progress has been so rapid that the two trial sections are well on the way to completion. This is greatly to the credit of British Railways and also of the contractors concerned. The two sections to be used as proving grounds for equipment run between Slade Lane Junction, Manchester, and Wilmslow, in the London Midland Region, a distance of nine miles, and between Colchester and Clacton in the Eastern Region, 19½ miles. Both sections of track are due for completion by the middle of next year, despite the large number of bridges that have needed alteration to a greater or lesser degree to provide clearance for the overhead wires. Between Wilmslow and Mauldeth Road, about a mile from Slade Lane Junction, the work of erecting the steel masts to carry the catenary is already half completed and it should be possible to energise the wires for experimental purposes by next May. The Colchester-Clacton line, including the branch from Thorpe-le-Soken to Frinton and Walton, has also been the scene of a great deal of civil and electrical engineering work. The work includes alterations to 22 bridges, changes to the track layout at several stations, lengthening sidings at Colchester and Walton, and the provision of an additional siding at Clacton, as well as incidental, but important, works such as the cutting-back of station awnings. By the end of October, almost all the foundations for catenary supporting structures had been completed and 40 per cent of the structures themselves were up. Work on the catenary was commenced on October 29 between Wivenhoe and Alresford. One nine-mile 50-cycle line already exists between Lancaster, Morecambe, and Heysham. This has been used for tests, particularly of rectifiers, but is electrified at 6·6 kV., the voltage to be used, where clearances are limited, at a number of points on all lines to be electrified. The locomotives and multiple-unit trains to be supplied will be capable of working at this voltage where required, and at 25,000 V. on the open lines. Electrification in general is now proceeding so rapidly that there are believed to be hopes of reaching not only York from Kings Cross by 1970, as planned, but of making good progress on the next stretch northwards to Newcastle.

The St. Johns Accident

THE accident in the Southern Region at St. Johns on December 4, with its death roll of 89, the third worst for casualties in the history of railways in the United Kingdom, is another example of how chance circumstances can affect the consequences of a collision. This one, very serious from the operating point of view, would have had far less grave results but for the presence of the bridge, brought down by the buckling of the colliding train as it struck the one in front; that in turn might have had an even more serious sequel had a train been moving over the structure at ordinary speed. The worst accident on Southern lines hitherto had been the collision at South Croydon, in 1947, with 32 fatalities—itself the gravest since the derailment at Salisbury with 28 deaths over 40 years before. The St. Johns accident is remarkable as having taken place in full colour-light signalling territory, where mishaps have been extremely rare and, we believe, unattended by any passenger fatality; the one exception was that at London Bridge in 1948, when debris struck an intending passenger on the concourse. Such signalling has been in operation at St. Johns since 1929, handling safely over 1,000 trains daily. Similar excellent results have been attained elsewhere on the Southern and this fine record must be kept in mind when reflecting on the calamity on which the official inquiry is now being held.

Machine Tool Orders Decline

ORDERS for machine tools in September, at £5·43 million, were the lowest for three years, a particularly disturbing feature being the drop in export orders to only £1·12 million. Whether this fall in export orders is connected with the European Machine Tool Exhibition held in Hanover in September remains to be seen. It is possible that buyers have been waiting until they could visit the exhibition before placing orders, and the October figures may show a satisfactory increase. Home orders, at £4·31 million, though the lowest this year except for April, are not greatly dissimilar from those of September, 1956, at £4·35 million, and may indicate that home orders are tending to smooth out at a lower level than last year's average of £5·32 million. A brighter side of the picture is that as the order book falls—as it now has done for 15 consecutive months—the British machine tool industry can quote better delivery dates to its customers. With the order book standing at £85·23 million at the end of September the industry had some 10 months' work in hand. Of the orders outstanding, roughly a quarter are for export. An encouraging feature is that the Canadian Trade Mission seems to have been impressed by British machine tool capacity.

Good Design of British-Built Coaches

THE generations of British engineers who for more than a century have designed passenger stock for railways in this country and overseas have been primarily practical men. Whether officers of British railways or employed in private industry, they have been concerned mainly to solve the technical problems and satisfy commercial requirements; the latter are concerned with comfort and the amount of accommodation justified by the payload. Nevertheless, British-built railway coaches, like the horse-drawn vehicles that preceded them, have almost always shown their designers to have a keen æsthetic sense. A notable example is the stock built half-a-century ago under the direction of David Bain, Carriage & Wagon Superintendent of the Midland Railway. There are many excellent designs being produced today, not least of vehicles supplied by British firms to railways in tropical and other overseas countries. We do not agree with some criticisms made by a correspondent in his letter published on page 674. The importance of design has been emphasised by the British Transport Commission in its appointment, in October, 1956, of the Design Panel; on this body, which is concerned with all equipment supplied to the nationalised transport undertaking, the technical, industrial, and æsthetic fields are well represented.

Staff Reductions on U.S.A. Railways

THE speed at which railways in the U.S.A. are trying to cut costs as the result of the recent fall in their freight revenues is shown by the extensive laying off of staff by some systems. In an editorial article in our November 15 issue, mention was made of drastic staff reductions by the Pennsylvania Railroad and by the U.S.A. railways as a whole; the latter laid off 12,000 employees between mid-August and mid-September. The New York Central System is now reported to have dispensed with 100 men at its freight car works at East Rochester, where the staff now numbers 600, against 1,600 a year ago. The New York, New Haven & Hartford Railroad has laid off 500 rolling stock repair staff. This is only one indication of the measures now being taken, which are stated to include considerable cuts in expenditure on new motive power. Public opinion in America tends to accept more readily than in other countries the laying off of staff in bad times. Without underestimating the seriousness of the U.S.A. railways' financial situation, one may doubt whether such drastic, and apparently hasty, steps ever would be taken in similar circumstances by railways in Britain; but the possibility of unemployment, if the financial position of our railways were greatly to deteriorate, should be borne in mind by British railwaymen.

American Railroading

IN August last, the Bureau of Railway Economics, Association of American Railroads, issued its 41st summary of statistics for the U.S.A. Class 1 railways, covering the years 1946 to 1956. In 15 statistical tables the bulletin gives sufficient information to answer almost any question that might be asked about railway performance in the United States. On another page in this issue a correspondent analyses the figures for the last nine years. These were by no means an easy period for railways in any country. It is remarkable that the U.S.A. railways succeeded in operating in 1956 at a ratio of only 76·9 per cent. This is less than the ratio of 77·3 per cent in 1948, when the costs of labour and materials were lower.

Dearer Platform Tickets

WITH the raising of the price of British Railways and London Transport platform tickets to 2d. in the New Year, one of the last penny facilities will disappear from the British scene. These tickets cannot be regarded as a source of revenue, for the cost of printing and of the clerical processes connected with them probably amounts at least to their face value. They were, in fact, never intended to raise revenue, but, by acting as a deterrent, to keep the public clear of the platforms. The idea came to Britain from the Continent, where these tickets were widely used, and the first stations to be "closed" to the public and fitted with platform ticket issuing machines were Taunton, Wellington, and Wolverhampton, on the Great Western Railway. This was in July, 1912, up to which time, with certain exceptions, particularly on the North Eastern, the "open" station had been the rule, though platform tickets were issued free at some points. In August, 1912, Reading, Bath, Stafford, Bangor, and Warrington were added to the list of "closed" stations. The first important test case, which drew a great deal of Press comment, was the "closing" of Manchester Victoria by the Lancashire & Yorkshire on March 3, 1913. In London, the London & South Western introduced the platform ticket system at Waterloo in May, 1913.

Remodelling an Indian Metre-Gauge Junction

THE principal constituent of the North Eastern Railway of India, the largest wholly metre-gauge system in the Republic, was the Bengal & North Western Railway. The major line in the Gracey-Izat "railway kingdom," it was one of the few railways in British India mainly financed and entirely worked by a company. Its headquarters, Gorakhpur, remained as the N.E.R. headquarter station, but its passenger and goods stations and yard still reflect the remarkably economical policy and methods of the former company. They are now completely out of date and inadequate to deal with present traffic, though Gorakhpur is the main centre of the N.E.R. Traffic converges upon it from four directions; over the main lines (1) from Kanpur (Cawnpore), Lucknow and Gonda to the west, and (2) from Assam, Katihar and Chupra to the east, as well as loop lines (3) from Gonda and (4) from Savan with their branches. A single long passenger-platform accommodates two trains tandem-wise and has to deal with connecting trains from all directions and many through coaches. The marshalling yard can handle only 300 wagons daily and the signalling is primitive in the extreme. As mentioned in our overseas columns this week, Gorakhpur is now being completely remodelled on modern lines; the work is to be completed before the end of 1958.

Timetable Control of Junctions

A FURTHER development of the automatic control of junctions is shortly to be put into operation on the London Transport Northern Line, as part of certain re-signalling work, by the application of the "programme machine." This is a moving punched record of the working timetable; by means of contacts established through the various openings in the band, as seen in the illustrations in the article in this issue, the route required for each train is set and signalled. It is, of course, essential to provide means whereby the timetable can be departed from if necessary, a train be cancelled, or any failure rectified as quickly as possible. An overriding supervision over each machine is exercised by the Controller at Leicester Square, who can, if need be, take the entire working into his own hands. The first machines will be in service at Kennington next month and others will follow, at Euston and Camden Town, rendering the central area of the line entirely automatic in normal conditions.

Silencers for Southern Region Diesels

THE decision of the Southern Region to fit silencers to the engines of its diesel-electric multiple-unit sets is the sequel to a number of complaints, both from passengers using the trains, and residents near whose property the trains run, of the high level of engine exhaust noise. As described on another page, the complaints were two-fold: they related to a high-pitched whine which emanated

from the engines' pressure-charger, and the exhaust "bark" which was particularly severe during some periods of acceleration. The silencer now being fitted is of the straight-through form—a type which finds a wide application for motorcars, where it is required to reduce the offensive high-pitched exhaust noise, without restricting the flow of exhaust gases and so reducing engine output. It is of interest that as far as concerns the manufacturer of the engines in these trains, the English Electric Co. Ltd., a special silencer is not normally fitted to its diesel traction units. In the early 1950s the company delivered to the Egyptian Republic Railways 19 five-car 800-h.p. and 11 three-car 400 h.p. diesel-electric trains, which incorporated this make of engine, although with a lower output rating without, as far as is known, any complaints of exhaust noise. It would seem that the geographical situation of some stations on the sections over which the Southern diesels run, particularly on the Hastings line, has contributed to the annoyance which has been expressed by a number of residents in some comparatively thickly populated areas.

One Commissioner for W.A.G.R.

THE wisdom of vesting the responsibility for general management of a railway in one man only has been recognised by the Government of Western Australia. The State Parliament has passed an amendment to the Government Railways Act, 1904-48; the purpose of this change is reversion of control of the Western Australian Government Railways from a Commission of three to a single Commissioner—in effect a General Manager. This step has been taken after consideration of a preliminary report of the Royal Commission now inquiring into the working of the railways. The outcome is that the Commissioner for Railways, Mr. A. G. Hall, is now the sole administrator of the Railways Department, responsible only to the Minister for Railways, Mr. H. C. Strickland.

The Royal Commission no doubt considered New Zealand, where also management by committee has been replaced by the only practicable form of general management as far as railways are concerned—a single General Manager. That is not to say that boards, whether of directors of company-owned railways, or of an appropriately representative nature for State-owned railways, cannot be of the utmost assistance in securing efficiency—or making it possible for the General Manager to obtain it. The happy relations which existed before nationalisation between the boards of some British company-owned railways and the General Managers and certain of the chief officers show how well this could be done; but there was only one officer responsible to the board for general management, even although his title might differ in the several companies.

Before coming to Western Australia, Mr. Hall had experience of sole responsibility in India, as General Manager of the North Western Railway, and later, Director-General of Railways, Pakistan. He has been Chief Commissioner for Railways in Western Australia since 1949. Recently there have been two Assistant Commissioners of Railways. It seems safe to say that now that he is in sole charge, his hand has been strengthened, though the W.A.G.R., like nearly all State-owned undertakings, is likely to be bedevilled by politics; but the firm guiding hand of a single, experienced administrator, as independent as possible from political complications—apart from supervision by the Minister—should help matters.

From the financial aspect the situation facing Mr. Hall is serious. For the year ended June 30 last, although the earnings of the W.A.G.R. reached a new high level at £14,000,000, compared with £13,300,000 for the preceding 12 months, operating expenses rose more steeply still, and there was a deficit of £5,300,000 after payment of depreciation and interest—an increase of £670,000 over the deficit for 1955-56. There was, however, an encouraging increase in freight traffic caused by a high demand for wheat for export. Also improvements in the Perth suburban passenger services have resulted in better passenger traffic results; efforts are being made to foster the suburban traffic by providing free car parking space at suburban stations and otherwise encourage the public to use the train services and so avoid the street congestion and parking difficulties in the city of Perth. Capital investment at June 30, 1957, was £45,600,000, an increase for the year of £2,400,000; of this, £1,390,000 was spent on motive power and rolling stock and £1,800,000 on permanent way renewals and improvements. The introduction of diesel locomotives and railcars has certainly done much to increase efficiency, and, in the case of railcars, to regain and to create passenger traffic. A good deal more, it is understood, remains to be done to raise the standard of the permanent way—to allow, amongst other things, the use of heavier motive power units and permit the higher speeds necessary for competition with other forms of transport.

Transport and the Common Weal

A BELIEF that, in the present state of scientific knowledge, there is nothing to beat the economy of steel wheels on steel rails, if used in the proper circumstances, was expressed last Monday by Major-General G. N. Russell, General Manager & Chairman of the Board of Management of British Road Services, and Member, Eastern Area Board, British Transport Commission, in his Henry Spurrier Memorial Lecture to the Institute of Transport, under the title "Transport and the Common Weal." If there were highways and airways in existence today, but no railways, he suggests, railway construction would be put in hand at once, but only where quite clearly there would be a chance of the railways operating at a considerable financial advantage. This would lead to a situation in which the railways would "cream" the traffic and provide services only when it was to their financial advantage to do so. It is quite certain, he comments, that no sensible people would set out to provide a service which took freight to every hamlet in the country, nor would they try to go into competition in paralleling bus routes through an intricate maze of small industrial towns. Attention would be concentrated on quick-moving trains carrying maximum loads between main centres. Train loads would be the criterion, leaving the road to deal with lorry and bus loads. He doubts whether marshalling yards would ever be invented—the railways would aim at loads which could fill complete trains moving between large depots at important centres.

Turning to railways as they now exist, he considers that commercial policy should be re-formulated, and the new charging powers used, so that railway activities would be broadly confined to those in which they can and will present a real challenge to the road. This policy entails both a positive and negative approach, positive in that it entails seeking out traffic which needs conveyance over long distances and in large quantities, and in adjusting charges accordingly, and negative in that it entails declining traffic for which rail conveyance is unsuitable. This could well lead to a considerable overall reduction in the size of railways. There will be many railwaymen who will agree with General Russell's view that the accident of history has caused the railway system to be cluttered up with large quantities of traffic which no one would have dreamt of sending by rail had the internal combustion engine been invented first. For a century, he points out, the railways have been preoccupied with gross revenue, and have been content to consider net revenue in the aggregate. With the costing services now available, and changes in the accounting system, it should be possible to ensure an adequate net return from every movement of traffic.

In North America, road transport can often give better transit times, and service, than rail, even over long distances, because of the delays—and expense—incurred in sorting, shunting, and marshalling trains. The same

is true in this country with its shorter distances. Except for private siding traffic, all rail movement of traffic must be preceded or followed by road movement, and there must be a clear economic advantage before it becomes worthwhile to transfer loads from road to rail vehicles and back again. To provide this incentive, railways must be able to give quick transits over reasonable distances by complete trains which do not pass through marshalling yards. He suggests that four major fields should be the prerogative of the railways. These are: high-density residential (or "commuter") traffic; rapid inter-urban passenger traffic; point-to-point train-loads of merchandise in suitable containers; and train-loads of minerals. As a corollary to this, he would expect to see a shift of short-distance traffic from rail to road. Nevertheless, he insists that there is a great deal of long-distance traffic which ought properly to stay on the roads, and he urges that the railway approach, even to long-distance traffic, should be discriminatory. If it is not, there might follow a wholesale depression of rates.

In the U.S.A. there is a growing feeling that the future lies in co-operation between rail and road—this in a country where competition between the two forms of transport has always been regarded as especially keen. The same need for co-operation will be felt in Britain, he suggests, if the railways succeed in setting themselves up as the efficient medium *par excellence* for moving bulk loads quickly over long distances. The restricted loading gauge in this country—one of the penalties paid by the railways of Britain for being the pioneers in railway building—prevents the carriage of road vehicles on railway wagons in the way now proving so successful in the U.S.A. and elsewhere, but General Russell thinks that attention should be paid to methods whereby the actual load is transferred by mechanical means, giving a better pay-load for the railways and releasing the road equipment. The container system, which gives many of these advantages, but entails the wide use of expensive cranes and the provision of skilled operators.

In Britain, we are now starting to develop a great transport system, just as a century ago our great-grandfathers were developing a great railway system. He enumerates some of the pros and cons of competition and possible waste through duplication of facilities. The ideal framework of transport, he considers, would be so devised as to give the best of all worlds—complementary forms of transport operating with a minimum of wasteful duplication, and sufficient competition to produce maximum efficiency, co-operating where this improves the standard of facilities provided.

This stimulating paper evoked an animated discussion, in which speakers included Sir Brian Robertson, Chairman of the British Transport Commission, Sir John Elliot, Chairman of London Transport, and several other figures prominent in the world of transport.

Gauge Conversion in Central Australia

THE opening of the standard-gauge railway from Stirling North to Marree marks an important step in the development of the north-western areas of the State of South Australia. It is of special importance also to the Northern Territory, as it is the first stage in the ultimate conversion of the narrow-gauge railway to Alice Springs to 4 ft. 8½ in. gauge. The 3-ft. 6-in. gauge Central Australia Railway reasonably met all requirements until the advent of coal traffic from the Leigh Creek coalfields. The railway was of limited capacity. The gradients are very severe; the ruling grade is 1 in 46; and the radius of the sharpest curve 6½ ch. The maximum gross load which could be conveyed by a double-headed train hauled by steam or diesel-electric locomotives was 600 tons. Development by the Government of South Australia of the Leigh Creek coalfields threw a great deal of traffic on to the narrow-gauge line, and this, with the ordinary essential traffic, taxed its capacity to the utmost.

In December, 1949, the Commonwealth Railways Commissioner recommended to the Commonwealth Government that a standard-gauge railway be built between the coalfields at Leigh Creek and Stirling North, the nearest point to the site of the State Government power house. This line was to have easier curves and gradients, on which heavier loads could be handled and substantial economies effected in train working costs. The recommendation was approved with a further recommendation that, as soon as the construction of the Stirling North-Telford standard-gauge railway was completed, the conversion of the Telford-Marree section of the narrow-gauge railway to 4 ft. 8½ in. gauge be commenced. Work began on the section from Brachina to Leigh Creek Coalfields in August, 1951. There was a difference of opinion between the State of South Australia and the Commonwealth Government as to the proposed route of the section Stirling North to Brachina. The Commonwealth submitted that, if the full benefits of the standard-gauge railway were to be obtained, it should follow an entirely new route away from the existing narrow-gauge railway. The State contended that the new railway should follow the existing route, realigned and regraded as necessary, and as part of the scheme for the eventual standardisation of the whole of the Central Australia Railway, previously agreed upon. A Royal Commission was set up, which, after investigating the merits of the respective routes, was in favour of the route proposed by the Commonwealth. Legislation was passed by the Commonwealth Parliament in 1952, and work was immediately put in hand.

Earthworks for the railway were carried out partly by departmental labour and partly under contract. Laying of sleepers and rails, fabrication of steel spans for bridges, construction of decking for rail-decked culverts, and erection of telegraph, telephone, and train control wires were also carried out by departmental labour. Excavation of rock and earth cuttings, the construction of concrete bridge piers and abutments, and the supply of stone ballast were by contract. Construction was hampered by the lack of manpower and materials, and the climate (with heavy rainfall on a number of occasions, and floods, which damaged bridges and caused washaways). Despite these setbacks, work proceeded steadily and the rails reached Brachina on May 28, 1955.

On completion of this stage, experiments were made with a pick-a-back system of working as a means of operating a quick, safe, and economic method of transferring freight and livestock from the narrow-gauge to the standard-gauge line. These proved satisfactory and this type of working was introduced on June 4, 1955. Sets of 16 standard-gauge bogie flat wagons, some 800 ft. long, were fitted with 94-lb. 3-ft. 6-in. gauge track. The forward ends of these tracks were welded to the decks of the wagons with the rear ends free to move slightly in a longitudinal direction. The standard-gauge train was backed up to a matching wagon, to which it was coupled. The narrow-gauge train was then propelled up a ramp and over the matching wagon straight on to the 3-ft. 6-in. gauge track laid on the standard-gauge train. All coal from Leigh Creek for Port Augusta power house, the bulk of the cattle from stations north of Brachina, consigned to South Australia stations via Stirling North, and certain other traffic were conveyed by pick-a-back trains.

The standard-gauge line reached Telford (Leigh Creek coalfields) at the end of May, 1956, and the haulage of coal from the coalfield to Port Augusta on the standard gauge throughout was begun on June 26, 1956. Immediately the platelaying for the standard-gauge railway to the coalfields had been completed, work on the conversion of the narrow-gauge line to Marree was started. The standard-gauge railhead reached Marree on June 29, 1957.

Work is proceeding on a new station yard at Marree to provide for the transfer of traffic to and from the 3-ft. 6-in. gauge railway, Marree to Alice Springs. The facilities provided will include livestock yards, goods and passenger transfer platforms, an installation for transfer of bulk petroleum products, and wagon washing plant. The new railway, Stirling North to Marree, represents the first stage of the ultimate conversion of the Central Australia

Railway (Port Augusta to Alice Springs) to standard gauge. It remains to be seen whether the link will be completed from Alice Springs to Birdum, the southern terminus of the 3-ft. 6-in. gauge North Australia Railway running to Darwin. To create an effective north-to-south railway connection across the continent, however, the N.A.R. will have to be converted to standard gauge; and it will be necessary to build a new standard-gauge line, or convert existing 3-ft. 6-in. and 5-ft. 3-in. lines to standard gauge, into Adelaide.

Canadian Railways and the St. Lawrence

ANY assessment of the present railway scene in Canada requires some study of the events and circumstances of the past. In his recent address to the Institute of Transport, Merseyside & District Section, on the Canadian Railways and the St. Lawrence Seaway, Mr. John Matthews, General Freight Agent, Canadian National Railways, devoted his remarks to a brief résumé of some factors which have vitally affected the development of Canadian railways.

Canada, he points out, is a country of some 17,000,000 people and three-quarters of all Canadians live between the 49th and 42nd parallels of latitude. The major geographical features include the Rocky Mountains chain in the West, and the Appalachians in the East, the great plains area in the centre of the continent, the great lakes—St. Lawrence water system with its broadly East-West orientation, and a vast inland sea in the North-East known as Hudson's Bay.

The two great territories of the Yukon and North-West Territories, which are under the administration of the Department of Northern Affairs & Natural Resources at Ottawa, comprise about 40 per cent of the surface of Canada. The North-West Territories alone are nearly half as large as the whole of the United States—and are flanked by Alaska to the West and the western shore of Hudson's Bay in their southern regions, and extends North to the Pole. These territories have not yet been organised as Provinces, but they now enjoy partial self-government with federal representation at Ottawa. In the economical field much exploration remains to be done, but already it is known that the two territories contain vast quantities of hard rock minerals, oil, gas, coal, forests, and good-sized stretches of agricultural land.

The two main trans-continental railway systems, namely Canadian National Railways, with a total operational mileage of some 33,915 miles in Canada and the United States, and the Canadian Pacific Railway with some 21,907 miles, are, Mr. Matthews maintains, highly competitive, but the establishment of the basic structure of rates and tolls, which are under the general supervision of the Board of Transport Commissioners for Canada, is predicated upon producing for the Canadian Pacific Railway a reasonable and justifiable return upon their capital investment.

Apart from Newfoundland and the Province of Prince Edward Island where the Canadian National Railways are the exclusive operators; the Canadian shipping and travelling public is served by two highly competitive systems and, despite the low density of traffic and the adverse climatic conditions, rates for the carriage of goods and passengers, on a ton-mile for freight, or a passenger-mile basis, are, he believes, about the lowest in the world. Additional to the two main trans-continental systems, there are a number of smaller Canadian railways such as the Dominion Atlantic Railway, the Ontario Northland Railway, the Algoma Central Railway, the Northern Alberta Railways, the Pacific Great Eastern Railway, and the Quebec North Shore & Labrador Railway. A number of United States railways either operate lines through Canada between border points or into Canada.

The Quebec North Shore & Labrador Railway, Mr. Matthews states, was constructed only in recent years and operates from the Gulf of the St. Lawrence at Seven Islands northwards to the Great Ungava iron ore deposits in Northern Quebec and Labrador. Because of the difficulties of the terrain and the lack of communication, the early construction of the line was largely dependent on air transport.

To keep a continental-wide railway system operating smoothly when by English standards part of the system is undergoing a heatwave and the other part undergoing a blizzard, he states, presents numerous problems. For example, conditions of drifting hard-packed snow in the lower St. Lawrence River area; exceedingly low temperatures in North Ontario and severe drifting all over the Prairies, and heavy snow slides in the Rocky Mountains. Winnipeg the winter before last, he points out, suffered snow to a total depth of 104 in. and it costs the C.N.R. $5,000,000 a year to keep the lines free from snow. Snow fighting equipment includes ploughs of various types, flangers, snow melters, snow loaders, and bulldozers.

Heavy snowfall is not, Mr. Matthews explains, the only difficulty. Trains are built of steel and hauled by steel locomotives on steel rails. Frost has an adverse effect on bearings and rails, lubricants freeze and below zero temperatures make it difficult to keep the air pressure for brakes at a desirable standard. To offset these conditions reductions in tonnage are often made necessary and, depending on the temperature, the reductions in tonnage may run as high as 50 per cent.

The St. Lawrence Seaway project, Mr. Matthews maintains, has been a subject which has constituted a most controversial issue between Canada and the United States for more than 50 years, for in 1905 a joint International Waterways Commission was created to deal with all matters relating to international waters between Canada and the United States. The subject, he adds, was first considered more than a century ago. From the deliberations of the International Waterways Commission there evolved the Treaty of Washington between Canada and the United States in 1932. However, this was not approved by the U.S. Senate. In 1941, the Great Lakes-St. Lawrence Basin Agreement was signed, but this, too, was not endorsed by U.S. Congress. The failure for either of these agreements to be ratified in Washington was largely due to lobbying by Eastern U.S. railways and various interests connected with the Eastern U.S. Ports. In December, 1951, the St. Lawrence Seaway Authority, a crown corporation, was proclaimed and the appointment of its members was made public in July, 1954, which indicated that Canada was prepared to go ahead on her own, with or without United States co-operation or participation. This action on Canada's part, he states, was not to the liking of some interests in the U.S., who did not wish to see a seaway in operation, entirely beyond U.S. influence and so they came in. In doing so, however, they insisted on tolls being levied.

Traditionally, Mr. Matthews maintains, Canada is opposed to canal tolls. The present shallow canals between Montreal and Lake Erie and the Sault Ste. Marie Canal between Lake Superior and Lake Huron are free; on the other hand, it is common U.S. practice to levy tolls to cover maintenance and amortise capital expenditure. In the Seaway Charter it is stipulated that the constructional costs should be liquidated by a system of tolls over a 50-year period; this came to be fully appreciated only recently that tolls were unavoidable when the tolls committee of the Canadian Seaway Authority met to hear representations from various interested parties who were opposed to tolls in any form, with one exception. The one exception, he states, was the Canadian Railway Association, who feared unfair competition by water as between Montreal and Fort William at the head of Lake Superior.

The main purpose of the project is, firstly, to develop the hydro-electric power resources principally in the International Rapids section of the St. Lawrence River, a 47-mile strip between Prescott and Cornwall, to provide some 2,200,000 h.p. for equal distribution between Canada and the United States, and, secondly, to provide a 27-ft. deep navigation channel from Montreal to the head of the Great Lakes which, together with the St. Lawrence, will create a 2,350-mile deep waterway from the Atlantic Ocean to the heart of the North American Continent.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Vibrational Aspects of Bogie Design

December 3

SIR,—With reference to the letter from Mr. John Rodgers, published in your November 29 issue, we wish to state that the S.I.G. torsion bar bogies as applied to the "Trans Europe Express" trains of the Netherlands Railways and the Swiss Federal Railways have been judged by competent railway officers to be "bogies with as yet unequalled running qualities." Vertical bolster springing is not dampened by hydraulic dampers but by friction only which, in addition, can be scientifically dimensioned. S.I.G. has delivered up to this date nearly 1,000 torsion bar bogies to all major railways in Switzerland; and it is most significant that no replacement of any part and no machining of parts after revisions have become necessary. Also, no torsion bar rupture has occurred, although ruptures are considered as normal with any other type of spring.

The vast field of possibilities for torsion bar bogies is shown by the Swiss Federal Railways' decision to have the new first class coaches equipped with S.I.G. torsion bar bogies and also to apply torsion bar motor bogies to the new 2,800-h.p. motor coaches.

We do not want to disparage the qualities of the bogies mentioned in Mr. Rodgers's letter, but we feel that the above facts should be taken into account when the different bogie types are compared.

Yours faithfully,

SWISS INDUSTRIAL COMPANY

Neuhausen Rhine Falls, Switzerland

Planning a Freight Transfer Depot

December 5

SIR,—All of us with the welfare of British Railways at heart agree with your correspondent, whose article was published in your November 29 issue, when he says that the subject is of some importance and that it would seem to demand the attention of both technicians and operators. One wonders whether in concentrating traffic in the manner suggested, it would be right to base our plans on the principle of the conveyance of road trailers by rail. While the trailer is admittedly a much less expensive unit than the motor lorry itself, the bulk of the capital invested in it is lying idle while it is in transit on a railway wagon. Moreover, the centre of gravity is high under such conditions, and some regard must be paid to the fact that the road vehicle wheels are on springs and fitted with pneumatic tyres.

It seems worth considering, therefore, whether it would not be better to concentrate on the extension of the container principle. In the past the railways have limited the use of containers by charging a differential, which varies according to the nature of the traffic. In theory this was supposed to recompense them for the loss of carriage on the packing materials. No doubt it can be shown that the revenue from the container differential amounts to a substantial sum; but we should not overlook the costs to which your correspondent refers in handling traffic which could be largely avoided if they were encouraged to pass in containers. We should also think of the volume of traffic now passing by other means which could be attracted to rail transport if the container differential did not exist. In other words, the problem is: would it pay the railways to drop the container differential altogether? Personally, I think it would.

It would be necessary to adopt this policy gradually because of the need to build up a greater stock of containers and the necessary flats on which they would be conveyed; though this could be done with a corresponding reduction in the wagon building programme, particularly for covered vans.

The ease with which the container can be transferred from road to rail, and the elimination of the dead capital involved in the conveyance of road trailers on rail vehicles, should reduce costs substantially. It would also make for quick terminal working. There would be no need for the overhead gantry fork crane which your correspondent advocates, because containers could be handled by mobile fork lift vehicles. The advantage of these would be their ready replacement when repairs are needed; the addition of further fork lift trucks when traffic needed them; and the ability to transfer the whole of the equipment elsewhere if and when traffic developments changed so as to make a given depot redundant.

The use of equipment on the lines suggested need not preclude its extension to privately-owned or privately-hired containers for use in those cases where firms desired the vehicle as an advertising medium and might, in fact, wish to use their own vehicles for collection and delivery work.

While I think your correspondent is right in expecting the scheme to yield a much better turnround of wagons, I do not think he would get any substantial amount of working in block loads. This presupposes the movement of train loads between individual pairs of points; and the extent to which this movement can be developed is necessarily limited.

Yours faithfully,

K. A. KINDON

11, Carmel Gardens, Darlington

Passenger Coach Design

December 3

SIR,—I was much surprised at the complacent tone of your comments on British railway coaches in the editorial article in your issue of November 15. You agree, for example, with the comments of Mr. R. F. Hanks, that "there was not very much wrong with the existing passenger stock . . . providing that it was kept clean and in good condition."

It would seem to me that you are leaving out of account that important element in design—good appearance. There has been during the past years a major revolution in the world of industrial design which has brought with it a vastly increased public awareness of the appearance of things.

While some of the prototype coaches displayed at the Modern Railway Travel Exhibition at Battersea last summer are a great advance on anything yet in service in this country, most of the designs, like the British Railways existing stock, fall far short of the standards of many of the coaches now in service on the Continent and in the United States. We have, in fact, a long way to go before there can be any justification for complacency, and little improvement can be expected until more coach manufacturers follow the example of Cravens Limited and commission leading architects to design the interiors of their coaches.

Nor should we be too complacent concerning the comfort that modern coaches provide. A glance back to the beginning of the century shows that, whatever improvements may have been made in springing and in reducing noise, the coaches of yesteryear were a good deal more spacious than those being built today. One of the diesel railcars on show at Battersea had two seats on one side and three on the other. However short the journey, such an arrangement cannot provide conditions of comfort for adult passengers.

Yours faithfully,

MAURICE JAY

Associate Editor
Contract Furnishing

Drury House, Russell Street, Drury Lane, W.C.2

THE SCRAP HEAP

Silent Night

Railwaymen relaying track at Southport on three recent weekends worked so quietly during their night operations that they earned praise from a local resident. He wrote: "We . . . are loud in our praise of the efficient and quiet manner in which this essential work has been carried out mainly in darkness. I know several people who were undisturbed in their rest during the relaying of track less than 15 yd. from their bedrooms."

Railway Time for a Sputnik

A group of railway workers assembled at the end of a Lancashire station . . . with a view to seeing the second Russian sputnik. After a long period of intense observation, an elderly guard . . . consulted a large pocket-watch and brought the gathering to a summary end with the authoritative assurance: "Well, gentlemen, if it's runnin' to time —it'll a gone!"—*From "The Manchester Guardian."*

London Tube Plans of 1897

Among new electric railway schemes which are included in the recent notices of intention to bring in Private Bills for the forthcoming session of Parliament are the New Cross and Waterloo, the City and Brixton, and the Paddington and Charing Cross. In addition other electric underground lines already sanctioned apply for extended powers, including the Great Northern and City, the City and South London, and the Charing Cross, Euston and Hampstead. Further we note that the Metropolitan and District companies apply for powers to work their lines by electricity. —*From "The Financial Times" of November* 25, 1897.

[After the first wave of tube railway promotion, which followed the opening of the City & South London Railway in 1890, there was a slump, as capital could not be raised. By the Diamond Jubilee year, two lines (the Central London and the Bakerloo) were being built with the aid of mining companies, and the above schemes represented the resultant revival of interest. No new scheme of 1897 succeeded, but the extended powers of existing companies were granted.—ED. *R.G.*]

"Keeping Track"

One of Canada's oldest periodicals, and its most widely circulated employee magazine, is to appear in 1958 with a completely new face and format, and a new name chosen by two young Englishwomen. Mrs. B. Hanreck, of Ascot, and Miss A. Robertson, of London, both submitted the winning suggestion *Keeping Track* as the new title for the *Canadian National Magazine*, the 43-year-old monthly house organ of Canadian National Railways.

Entries were received in a contest sponsored by the management to select the name, and the winning entry was selected for its originality and obvious association with railways.

British Locomotives in Russia

The recent visit to the Vulcan Foundry, Newton-le-Willows, of the party of officials of the U.S.S.R. Ministry of Railways now touring Britain, is a reminder of how much was done by the British locomotive industry to equip the various railways of Imperial Russia. The Vulcan Foundry first delivered a locomotive to that country in 1843. Exports from the United Kingdom increased in the following decades. Several firms participated. The late Robert Weatherburn in his absorbing series of articles "Leaves from the Log of a Locomotive Engineer," published in our associated journal, *The Railway Magazine*, in 1913-14, tells how in 1869-70, he superintended the erection of engines on behalf of Kitson & Co. Ltd. in several parts of Russia in Europe.

Marching On

(*British Railways are studying the use of automation in issuing tickets and reserving seats*)

You may think it strange that man
Should assiduously plan
To contribute to his own elimination.
Yet your ticket and your seat
May some day you reach complete
Per some mechanised contrivance at the station.

It can be illuminating
Once you get to ruminating
On what might be rather than what might have been;
What if robots should be able
To revoke the curse of Babel—
For you can't get much old buck from a machine!

Now that speeds are supersonic
A new language—Electronic—
May be just the thing the world is waiting for.
If, say, every human brother
Could converse, one with another,
Would or wouldn't that remove the risk of war?

Who can say? Back to the station
And impending automation
And the impact it may have upon one's journey.
Well—if fares go up again,
Future travelling by train
May depend upon what luck we have with "Ernie."

A.B.

Yangtse Railway Bridge Depicted in Postage Stamps

Stamps on a letter received by us from China show the new rail and road bridge over the Yangtse near Hankow (*see our August* 30 *and October* 4 *issues*)

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Supplies of Wooden Sleepers

A meeting of the track supply and sleeper control officers of the several railways took place recently at Amritsar to review the position of the permanent way materials. The supply of wooden sleepers figured prominently in discussions.

The railway officers visited the pressure creosoting plant at Dhilwan; this has an installed capacity for treating 1,400 broad-gauge sleepers per shift. The plant treats sleepers made out of Himalayan conifers. The impregnation of creosote and fuel oil (40 : 60) is stated to afford immunity to the sleepers against fungal and insect attack and to lengthen their life in the track for 2-15 years.

Remodelling at Gorakhpur, N.E.R.

Traffic centring upon Gorakhpur, the headquarters and principal focal point of the North Eastern system, has now completely outgrown the capacity of that junction. Consequently it is being remodelled on modern lines to deal adequately with passenger and goods traffic converging upon it from four directions. The present yards are hemmed in and not easily expanded, so that it has been necessary in the first instance to move away out of them the important locomotive running depot. A new American-type round house has been built with 32 tracks radiating from its central turntable.

Additional platforms are being built to accommodate passenger and parcels trains, and the marshalling yard is being re-arranged and expanded to accommodate 500 wagons daily as opposed to 300 at present. It will be controlled by a three-storey yard master's control office. Cabins are also being built to operate groups of points and these are in tele-communication with the yard-master. Servicing arrangements for passenger and goods stock are also being vastly improved. High-tower flood-lighting is being installed throughout the yards.

The work, which is estimated to cost some £175,000, involves the dismantling and relaying of 13¼ miles of track and the laying of 5½ additional miles with 30 sets of points and crossings. All the earthwork for the formation is being trained in. It is anticipated that the whole work will be finished in about a year's time.

UNITED STATES

New Marshalling Yard at Atlanta

The recently-opened mechanised marshalling yard at Hills Park, Atlanta, was planned originally as a joint facility by the Louisville & Nashville and Nashville, Chattanooga & St. Louis Railroads, which have since become merged as a single system. A considerable earth-moving operation was needed to provide the necessary flat area for the yard, involving cutting into a hillside to a depth of 114 ft. on one side, and filling to a height of 102 ft. on the other, and a total movement of 4,000,000 cu. yd. of soil.

Freight trains of up to 150 bogie wagons can be accommodated in the receiving and departure yards, which have total capacities of 805 and 584 wagons respectively. A maximum of 2,000 wagons per day can be handled through the yard, and the completed earthworks will permit the laying in of 16 additional sidings when expanding traffic may so require.

Equipment includes an electronic scale 105 ft. long for weighing the wagons as they approach the rail-brakes from the hump; a Velac installation estimates the speed of each cut as it approaches and with the weight factor and electronic computation of the extent to which each receiving siding is filled applies the appropriate pressure to the railbrakes to ensure that the coupling speed of wagons in the sidings shall not exceed 2 to 4 m.p.h. A list of the wagons in each train, punched into a paper tape, feeds through a telegraph printing receiver and automatically controls the switching as each cut passes the hump.

San Francisco Ferries

The Southern Pacific Railroad is applying to the Interstate Commerce Commission for authority to discontinue its ferry service across Oakland Bay between San Francisco and its Oakland Pier terminal, and to substitute motorcoaches for passengers and lorries for mail, baggage and express; the road vehicles would cross the Oakland Bay Bridge.

Because of declining passenger traffic, the original ferry fleet, which was on an extensive scale, has now shrunk to three vessels. One, the *Eureka*, has been withdrawn already and presented to the San Francisco Maritime Museum, which will exhibit it permanently as a ferry-boat memento in the Project X transport museum to be established at Aquatic Park.

Commuter Motorcoach Competition

Earlier in the year a group of Chicago "commuters," or outer suburban residents coming daily into the city, chartered a luxury motorcoach for their journeys, with reclining seats, carpeted floor, television, air-conditioning, and a hostess serving coffee and soft drinks. The coach took 75 to 80 min. for the 27½-mile run, compared with 48 min. by Illinois Central train, and the cost of the former worked out at $29·40 per person per month as against $20·18 for 23 round trips by train. In the end the motorcoach promoters found that they could count on only 17 regular passengers, and the service came to an end on November 1.

CANADA

C.N.R. Classification Yard at Moncton

Mr. Douglas V. Gonder, Vice-President & General Manager of the Canadian National Railways, Atlantic Region, recently announced plans for the building of a hump retarder classi-

Netherlands Railways Submarine Tunnel

Train emerging from the tunnel under the North Sea Canal at Velsen, on the Haarlem-Alkmaar line (see our April 12 and October 4 issues)

fication yard at Moncton, New Brunswick, at a cost of some $17,000,000.

The installation will greatly increase the capacity of Moncton freight yards, facilitate the movement of freight from coast to coast in Canada, and allow the handling of more and larger trains daily at Moncton.

URUGUAY

Railway Strike

Some 10,000 railwaymen who had been on strike since November 15, resumed work on December 1, after securing wage increases averaging more than £4 a month.

SWITZERLAND

" House of Transport " in Lucerne

The Swiss House of Transport, which will house temporary exhibitions of transport equipment and a fund of museum exhibits, is to become a centre of Swiss transport studies. It is to be opened in the Spring of 1959.

FRANCE

Demonstration of Electronic Computer

The I.B.M. Company recently demonstrated the capabilities of its 704 computer. One of the first problems dealt with by this machine, when it was made available for research and industrial use, was the calculation of the point-to-point timings which will be possible on the Paris-Lille line when electrification is complete. For these calculations the machine was fed with data in the form of perforated cards giving the load and length of the train; a curve of the pull at the wheel as a function of the locomotive speed; output characteristics of the locomotive; heating characteristics of the motor in steady operation; profile of the line; resistance to movement of the locomotive; authorised speed limits on the various sections of line; resistance to movement of trailing vehicles; braking power; and so on.

For each section of line, for each variation of profile, and for a number of specific locations results were obtained giving speed attained; cumulative timings; energy consumed at the wheel and at the pantograph; the temperature reached by the traction motors; and the average current in the motors over the distance in question.

Packaging Laboratory

Before the move of the General Packaging Laboratory to new premises near Auteuil Station, the services of the laboratory were available free, except for major studies, to all traders. It has now been decided, however, to institute a tariff of charges, and all traders desiring advice on the most suitable design of package for their traffic must pay the appropriate charge.

Reconstruction of Châteauroux Station

The station buildings and complementary facilities at Châteauroux, on the Paris-Toulouse main line, which were partially destroyed during the war, have been reconstructed. The work has taken into account present operating methods and a decision to build a bus station nearby. In front of the station a glass-covered awning replaces the former approach, and ticket and parcels offices, cloakrooms, and so on, have been modernised. The platforms and track layout have been suitably modified to enable a subway to be constructed.

Fares and Rates Indices

It has been calculated that, in comparison with a weighted index of 100 for 1949, main-line passenger fares at the end of 1956 had an index of 191; in the case of suburban fares, the corresponding index was 203. For freight traffic, again taking 1949 as 100, the index of the level of receipts per *tonne*-km. had reached only 132 by the end of 1956.

SWEDEN

Stockholm Underground Link Opened

The central section of the Stockholm underground railway, between Kungsgatan and Slussen, was opened on November 24. King Gustaf Adolf and Queen Louise attended the ceremony and the King made the inaugural trip in the driver's cab of the first train. The new line links the northern and southern Tunnelbara sections, which up to now have not been physically connected.

Publications Received

British Electric Trains. Hampton Court, Surrey: Ian Allan Limited, Craven House. 6¼ in. × 4 in. 65 pp. Illustrated. Price 2s. 6d.—Besides listing the electric locomotives and multiple-unit sets in service in this country on similar lines to other publications in the " A.B.C." series, this booklet gives principal technical details and the historical background of the various electrified systems. It therefore forms a well-illustrated, pocket-size handbook on the present state of electric traction on British Railways and certain independent systems, such as the Glasgow underground and the Brighton (formerly Volk's) Electric Railway. A useful feature is the inclusion of lists of headcodes showing empty and other non-passenger workings as well as destination stations and routes. Codes formed by different lamp groupings are illustrated by diagrams.

The Collapse Method of Design as applied to Single-Bay Fixed-Base Portals.—This 40-page booklet is No. 11 of a series of technical publications issued by the British Constructional Steelwork Association, and has been written for B.C.S.A. by Mr. F. A. Partridge. It covers the design of single-bay fixed-base portals and forms the second part of a report demonstrating in detail the collapse method of design. The first part of the report, dealing with beams and pinned-base portals, is contained in B.C.S.A. Publication No. 5. There are copious diagrams. The booklet is available from the Association at 94/98, Petty France, London, S.W.1. Price 2s. 6d.

Melting Practice for the Production of Aluminium Alloy Castings.—This booklet, which was first published in 1951, has now been revised and a new edition has been published. It has been prepared for the " man in the foundry," in an attempt to explain to him briefly and in simple terms the melting and preparation of aluminium alloys up to the casting stage. Copies are available free of charge, from Alar, Limited, 3, Albemarle Street, London, W.1.

Leaflets Published by Lancashire Dynamo Nevelin.—Three leaflets published by Lancashire Dynamo Nevelin Limited, of Oxted, Surrey, are concerned with equipment manufactured by the company. " LS.1800 " describes a range of standard alternator control switchboards and feeder panels suitable for ratings up to 2,000 A. at 650 V.; " LS.40 " deals with standard and " purpose design " heavy industrial switchboards and Unifront flush fronted switchboards for low tension distribution applications; and " NML.12 " describes the manufacturer's Varionic variable speed drive which is available to provide a wide range of speed for outputs up to 1,000 h.p.

Noral Products Tables of Weights.—This booklet, produced by the Northern Aluminium Co. Ltd., Banbury, Oxon, is intended to provide a ready source of information on the weights of many of the aluminium products—sheet, corrugated sheet, plate, circles, bar, tubes and wire—manufactured by the company. Designed for easy wall-mounting where required, the 11 in. × 8½ in. thumb-indexed booklet is a useful source of reference.

An Insight into Plastics Moulding.—This booklet of 16 pages has been produced by Hellerman Limited, of Crawley, Sussex. It gives a brief outline of the basic characteristics and essential nature of each of the materials which the manufacturer uses. Its purpose is to provide designers and prospective customers with an indication of the many possibilities of plastics materials. Copies of the publication can be obtained on application to Hellerman Limited.

Training in Diesel Operation for Senior Staff

Diesel wing built at Derby Staff College for residential courses

General view of interior of main instructional hall

THE diesel training programme of British Railways has two major lines of approach. As has been indicated previously in this journal, a series of local driving schools has been or is being established on a Regional basis for the training of drivers and fitters concerned with day-to-day operation, and the servicing of diesel-powered locomotives and multiple-unit vehicles, representing one line of action. The other is a centralised syllabus of training in operation at the British Railways Staff Training College at Derby for staff of up to Officer level of the Chief Mechanical & Electrical Engineers', Carriage & Wagon Engineers' and Motive Power Superintendents' Departments of all Regions of British Railways.

Prefabricated Construction

For the latter a large prefabricated building has been erected in the college grounds to provide accommodation for the considerable equipment required for training senior staff in diesel locomotive operation. The technicalities of the various types of diesel engines; mechanical, hydraulic and electrical transmissions; fuel injection systems and ancillaries, are dealt with at the wing. This diesel wing comprises a main hall 94 ft. long by 40 ft. wide, housing the main instructional equipment, a smaller room for fuel injection equipment demonstration, and a maintenance workshop.

The building was designed by Mr. H. H. Mathews, formerly Architect for London Midland Region, and the construction work was by Seco Limited. The installations and ancillary work were carried out by the Chief Civil Engineer, Chief Mechanical & Electrical Engineer, and Carriage & Wagon Engineer of the Region.

The students attending the courses at the Staff Training College are drawn from the three technical departments mentioned above in all Regions of British Railways, from mechanical foremen, and inspectors to senior members of these departments such as assistant works managers and district motive power superintendents.

The courses are residential and the students live in the main College buildings. Theoretical tuition, and instructional film showings are provided in the college classrooms and cinema, while practical instruction and equipment demonstrations are carried out in the diesel wing.

Between 10 and 12 courses are arranged annually, each of 20-30 students according to the type of course required by the status of those attending. The courses vary in duration from a fortnight for foremen from the Mechanical & Electrical Engineering and Carriage & Wagon Engineering Departments, up to five weeks for supervisory staff, such as shedmasters. The supervisory staff require considerable practical work with the demonstration equipment in the diesel wing, and are instructed in smaller numbers than staff with more advanced theoretical qualifications. Each intake of students is divided for tuition and practical work into groups of between nine and twelve.

Each course is basically similar, but the syllabus is varied as to treatment and mode of instruction at five levels, again according to the status of the students and their requirements. Tuition is carried out, under the general direction of the Principal of the Staff Training College, by a staff of one senior instructor assisted by three instructors, two of whom are mainly concerned with electrical matters. Lectures are also given by specialists representing equipment manufacturers.

Syllabus

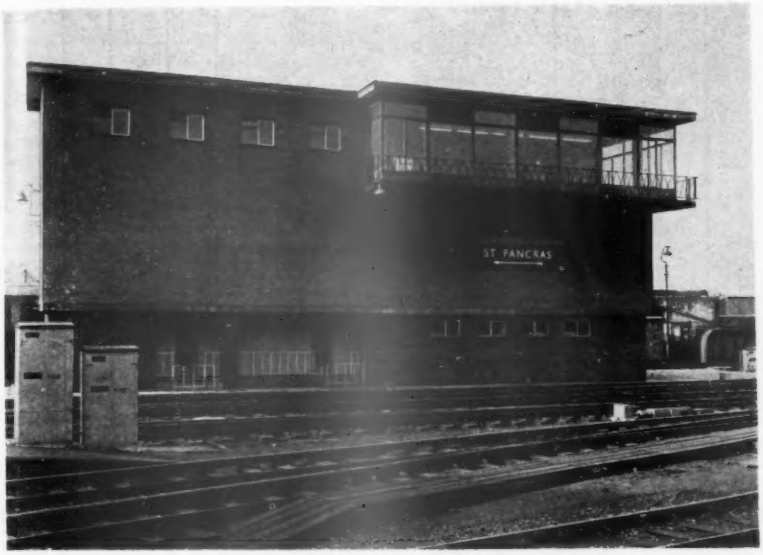
The courses cover construction and serving of diesel engines and components, fuel injection equipment, lubricating and cooling, and transmission systems, pressure charging, principles of

(*Continued on page* 682)

Sectioned diesel engine and gearbox used for instruction at diesel wing

St. Pancras Terminus Re-Signalling, L.M.R.

Electro-pneumatic point operation with relay interlocking, colour-light signalling and track circuiting as part of improvement scheme for former Midland main line



New relay interlocking signalbox at St. Pancras, showing operating room. The relay room is on the centre floor

FOR some time the London Midland Region of British Railways has had in hand the re-signalling of the old Midland Railway main line out of St. Pancras terminus, as far as Carlton Road Junction, a short way north of Kentish Town. Some of the work, including a new signalbox at Dock Junction, was completed during 1956, as mentioned in our issue of August 10, 1956.

On October 7, 1957, as briefly recorded in our October 11 issue, the two boxes at St. Pancras, which originally contained some 200 levers in frames of the former Midland Railway "tumbler" interlocking design, with another box a short way out at Cambridge Street, were replaced by a single one of relay interlocking type, working on the route setting principle. The short distances between the old boxes and nature of the track layout necessitated a large amount of signal slotting which, with ordinary block working, called for a great many signalling movements for each train. The original inner home signal bridge, carrying no fewer than 42 signal arms, was replaced many years ago by combined semaphores and route indicators, effecting a considerable simplification from the driver's point of view but not affecting the working in other respects.

The recent change, by which colour-light signalling has become continuous on the fast lines from the terminus to Finchley Road, at the north end of the Belsize Tunnel, a distance of about three miles, provides much greater flexibility of working and has resulted in an appreciable speeding up of the movements in and out of the station. Block working has been retained for the time being on the goods lines to the North London Incline signalbox; but between St. Pancras and Dock Junction on the fast lines train describers are used.

Track circuiting is provided, as indicated in detail on the accompanying signalling diagram, and there are three ground frames in the station area with another at the up end of the carriage line, all electrically controlled from the new box.

Signalbox and Controls

The new box, of the latest design for this class of structure and provided with every amenity for the comfort of the staff, with which are associated a power house, workshop and enclosed space for cooling tanks and air reservoirs, has an operating room with large windows commanding an excellent view of the station area. In this room is a console, or large desk, carrying 205 route switches, 33 switches for individual emergency point operation and others for ground frame releases all constructed on the plug-in principle to facilitate rapid inspection and renewal.

Above the actual operating portion are panels for ground frame bell, signal and other telephone communication facilities, train describer transmitter, emergency block bells and goods line block apparatus, with fault indication lamps referring to the various power and air supplies. Behind stands the illuminated diagram, carrying at the top a panel for the incoming train descriptions, on which 64 track sections are shown. Occupancy is indicated by red lights and a route which has been set up by evenly spaced white ones. Two flashing yellow lights at the end of each platform outline indicate when the person in charge has operated his "train ready to start" plunger.

The turning of a single route switch will operate all the points requiring to be set for a movement and, when they have correctly responded and are

Operating room, showing signalman's console with route setting and other switches, illuminated diagram and, above, train description receiver indicator

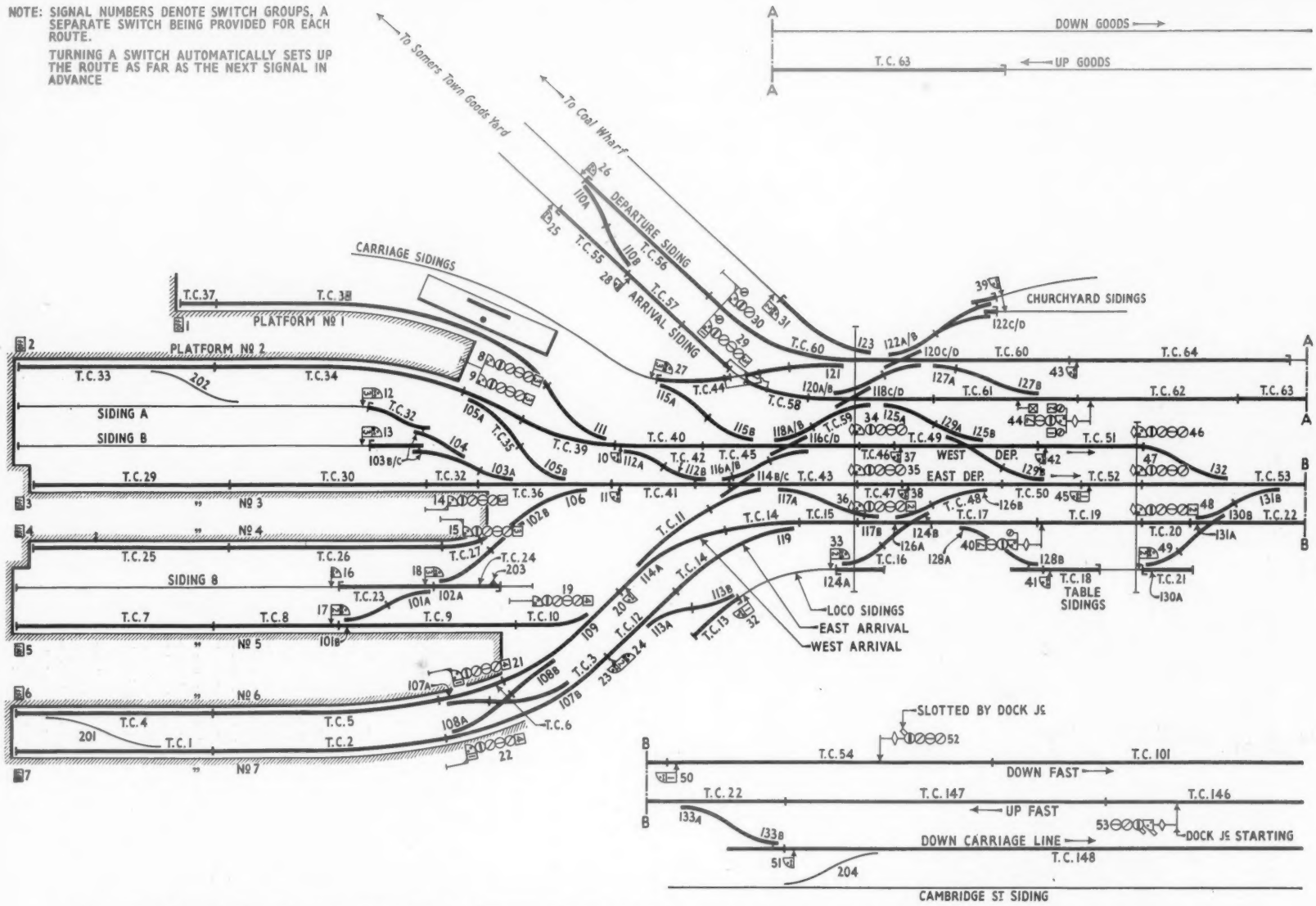
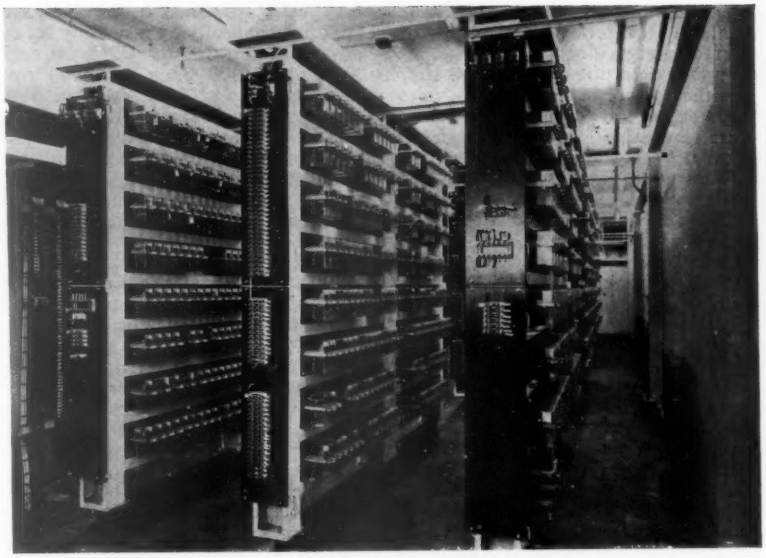


Diagram of lines and track circuit sections, St. Pancras terminus, London Midland Region, showing points and signals operated from relay interlocking signalbox brought into service on October 7, 1957

locked, will clear the relevant signal. No pre-selection facility is provided; the circuits are arranged so that a route can be established only if at the instant of turning its controlling switch conditions are right for that to take place.

Such a switch, if left in the turned position without immediate effect, remains completely inoperative after that and must be restored to normal and re-operated when the correct conditions obtain so as to set up the route to which it relates. Directly opposing routes alone are interlocked by the signal route relays, other conflicting ones being dealt with over the point lock relay contacts. Intermediate ground signals are cleared automatically when a running signal route switch is operated and similarly restored after the passage of a train, with provision for throwing any one of them to danger in an emergency.

Special "calling on" controls ensure that a subsidiary under an up home signal can only be cleared for a platform line occupied at its outer end if the incoming train does not exceed a certain specified length measured by track circuit, so that no full length train can be signalled into a fully occupied platform by a "calling on" indication. Below the operating room is the relay room occupying the entire middle floor and containing some 1,400 plug-in type relays. On the ground floor are the accommodation for the linemen, the drying room, store, and so on.



Interior of relay room on second floor of signalbox, showing plug-in type relays mounted on racks

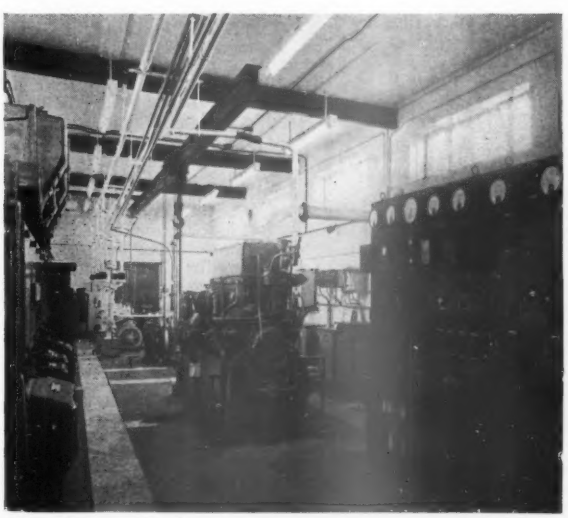
Signals

Running signals, either two- or four-aspect, have 12V. 24W. S.L. 18 type lamps and, where necessary, work in conjunction with theatre type route indicators, while their subsidiaries have 110V. 25W. lamps. The ground signals, of "Westalite" type, incorporate the special optical features peculiar to that design and, where required, carry stencil type route indicators. The stencilled letter on clear glass is located behind an external pot blue flashed opal glass. Such indicators also are used where a train engine can be standing ahead of a signal when waiting to start and indicate "OFF" when the signal is cleared, together with the appropriate route letter. Movements from running lines into sidings are governed by small yellow signal units using 110V. 25W. 3-pin lamps. Signals and indicators are repeated in the signalbox by small lamp indications of various colours.

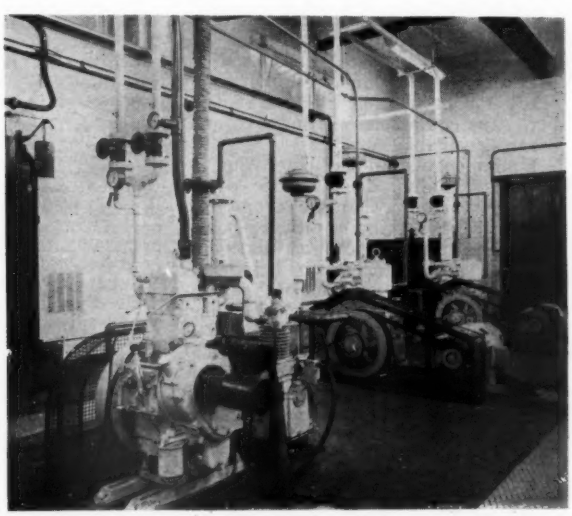
Points

The points are operated by electro-pneumatic mechanisms with self-contained locking attachments and the most modern type of cut-off valves, to economise air consumption. Valve magnets are wound for 24V. d.c. and incorporate transformer-rectifier units, enabling 110V. a.c. to be applied to the control lines. These units have plug couplers and can be changed without any re-checking of wiring connections; also an interlocking attachment governing the insertion of a special key, by which, should there be an electrical failure in the controls to the point valve, the points can be operated locally by hand.

This interlocking feature provides automatically for the interruption of the control circuit under such circumstances. Both normal and reverse



Power house with, on right, main switchboard and, in centre, diesel-generator standby set for covering failure of mains supply



Motor driven air compressors and diesel standby compressor in power house, with carbon dioxide cylinders for fire extinguishers

operating magnets are equipped with contacts to prove electrically their correct energisation in the corresponding point detection circuit. This simplifies the control circuits and provides a high degree of protection against any false operation from an extraneous source.

The detection circuits are two-wire, operating on 110V. a.c. Adjustable check valves are provided to regulate the speed of operation of the points, as may prove necessary.

Track circuiting is d.c. throughout with rectifier fed sections and 12-V. d.c. repeater relay circuits.

Power House and Power Supply

The power house is a separate brick building with concrete roof and a four-ton travelling chain block above the machinery, also a complete CO_2 fire extinguishing system arranged for manual or automatic operation. Power is from a 415-V. three-phase four-wire 50-cycle supply, and a single-phase supply from two phases is transformed to 650 V. as a signalling feed in the area and up to Carlton Road Junction.

Lighting and small power appliances in the box and power house are fed at 240 V. from the third phase and neutral, while the compressor motors are fed from all three phases. Should the incoming supply rail signalling and lighting loads are taken over within seven sec. automatically by a standby set consisting of a Ruston 5 VPH. oil engine developing 100 b.h.p. at 1,000 r.p.m. directly coupled to a 56-kVa., 650-V. single-phase 50-cycle Brush self-regulating alternator with Amplidex system of control. Synchronising facilities enable the two supplies to be paralleled and load transferred without interrupting the supply to the signalling.

A 650-V. ring main, with step-up auto-transformers at Dock Junction and Islip Street for voltage regulation, supplies signalboxes and outside locations up to Carlton Road Junction, and a 110-V. similar main deals with locations in the St. Pancras station area. There are separate 110-V. feeders to individual relay room busbars from the power house.

Compressed Air Plant

There are two main compressors of the Broom & Wade D13 single-cylinder, water-cooled type, delivering 30 cu. ft. of free air per min. at 360 r.p.m., driven by Verity 10-h.p. slip ring motors; and a diesel-driven emergency one consisting of a Ruston 1YB oil engine developing 6 b.h.p. at 1,500 r.p.m. driving through a laminated V-belt drive a Broom & Wade N2 single-cylinder, water-cooled compressor delivering 10·25 cu. ft. of air per min. at 460 r.p.m.

Air is compressed initially to 125 lb. per sq. in. and reduced to 50 lb. working pressure in the mains to ensure dry air being delivered to the point mechanisms; spur connections are taken to the latter from a ring distribution main.

Either ordinary compressor may be selected for duty, leaving the other in reserve; they work automatically by change of pressure in the air receivers. If the one in service fails the other will automatically take over. Should, however, the incoming electric supply fail the emergency diesel driven compressor will be started up and continue to run, unloading automatically when correct pressure is obtained, until stopped manually. The air receivers and water cooling tanks are outside the power house.

Installation

The main signalling contractors were the Westinghouse Brake & Signal Co. Ltd. Standard Telephones & Cables Limited supplied the train describer equipment. The signalbox was built for the Chief Civil Engineer by Chas. Booth & Son Ltd. The work has been carried to completion under the Signal Engineer of the London Midland Region, Mr. E. G. Brentnall, but was designed and commenced under his predecessor, Mr. S. Williams.

Training in Diesel Operation for Senior Staff

(*Concluded from page* 678)

electrical equipment as applied to locomotives, and so on. The syllabus has been evolved after a series of pilot and experimental courses which began at the Staff Training College last year. These were described in our issue of July 20, 1956. With the experience gained from these courses, and now that full equipment is available at the diesel wing, the college has begun a long-term programme of courses as outlined. The erection of the diesel wing began in May of last year and the building was ready for occupation by last September. The equipment was installed as it became available.

Equipment within the diesel wing includes a 350-h.p. diesel-electric power equipment, from a shunting locomotive, arranged for working at reduced power using one traction motor as a generator, the power therefrom being absorbed in a water resistance; a half-set of railcar power equipment—engine, gearbox, final drive and control gear—arranged for working against the normal vehicle braking system; a 3·5-kW. diesel-electric generating set arranged for working against a resistance load; and a universal electrical set comprising five machines in-line which may be mechanically and electrically coupled together as required. These machines may be used as motors or generators, being provided with shunt and series fields either or both of which may be used; a variable resistance electrical loading unit is incorporated in the set, and also a mechanical brake. With this apparatus the characteristics of various types of motors and generators can be demonstrated and the working of a complete diesel-electric traction power equipment simulated.

When members of the technical Press visited the wing recently, opportunity was also afforded to observe a little of the training of diesel drivers at the London Midland Region school at Derby. Later, a journey on a diesel set was made on the Churnet Valley line which is used for the practical training of drivers at the school. The school was referred to in our issue of July 22, 1955.

PROGRESS ON EAST COAST MAIN-LINE WIDENING.—Earthworks in connection with the East Coast main-line widening scheme are well advanced and tunnel driving is proceeding satisfactorily. The Potters Bar bore is nearing the half-way mark, some 500 yd. having been tunnelled. An air-shaft—the first of the two required to ensure adequate ventilation of the tunnel—has been sunk. The Hadley North tunnel, which is to be 232 yd. long, should be finished at the end of the year when the tunnelling shield in use there will be employed to drive Hadley South tunnel, working from the north end southwards. A minor work of interest is the reconstruction of an aqueduct carrying a stream across the main lines north of Potters Bar tunnel. The acqueduct will consist of 3-ft. 6-in. dia. steel tube and should be completed early in 1958. An integral part of the scheme is the enlargement of Hadley Wood station, where platform extensions are well in hand, as is the construction of the new footbridge. The reconstruction of the platform buildings will be commenced in the near future.

REWARD FOR HEROIC SIGNALMAN.—The heroism shown by a railway signalman on August 6, in wading through waist high floods to reach his signalbox and give warning of floodwaters sweeping across the track was recognised at an informal ceremony at Euston on December 2. Signalman George William Thorley, of Norbury, Derbyshire, was presented by Mr. E. W. Arkle, Director of Traffic Services, London Midland Region, British Railways, with a cheque for 10 guineas and a certificate for meritorious conduct signed by Mr. David Blee, General Manager.

ELECTRONICS IN OFFICES.—The Office Management Association, at a Press conference last week in London, introduced a new illustrated publication "Electronics in the Office"; this describes the use of electronic computers for clerical work and the new approach which has to be made to the organisation of office work before a computer is installed. It was emphasised at the conference that computers were not the answer to all problems, as was sometimes believed. The book has been produced to give prospective users and others who wish to understand the scope of computers and their functioning a non-biased picture of their possibilities. Among the companies whose experiences are described are Rolls-Royce Limited, J. Lyons & Co. Ltd., Shell-Mex & B.P. Limited, and the Morgan Crucible Co. Ltd. The publication is obtainable from the Office Management Association Limited, 58, Victoria Street, London, S.W.1. Price 21s.

Nine Years of American Railroading

An analysis of results, 1948-56

(By a correspondent)

BETWEEN 1948 and 1956 the U.S.A. railways had the good fortune to remain independent undertakings in private ownership, though subject to the Interstate Commerce Commission's regulatory powers. Over these years railway mileage decreased from 226,900 to 223,460; but investment in railway property, after accrued depreciation, increased from $23,258 million to $27,012 million, or by 16 per cent. Unfortunately the rate of return on investment fell from 4·3 to 3·9 per cent, because net railway operating income, or earnings before charges, rose by only $66 milion, or 6·5 per cent, to $1,068 million. Such a low return is apt to deter the railways from incurring further capital expenditure.

The dramatic event of the nine years was the supersession of the steam locomotive by diesel-electric motive power. In 1948 the railways owned 32,910 steam engines; at the end of 1956 only 3,710 were left, a reduction of nearly 89 per cent. The railways also scrapped 223, or 27 per cent, of 829 electric locomotive units employed in 1948. Meanwhile the diesel fleet grew rapidly from 8,090 units to 26,080—an upsurge of 222 per cent. An impulse to the daily mileage of locomotives was felt quickly. On an average, a freight locomotive worked 149 miles a day in 1956 against 117 in 1948, a rise of 27 per cent; the average passenger locomotive ran 326 miles against 221, a rise of 47 per cent. The efficient and dependable diesel made possible a reduction in the number of locomotives of all types in service from 41,850 in 1948 to 30,430 in 1956. The 27 per cent saving in locomotive stock meant that the railways required 5,250 fewer engine drivers and motormen in 1956 than they needed in 1950. That was a valuable economy, for the average annual earnings of a man in these grades varied from $7,430 to $9,370 in 1956.

During the last nine years another outstanding feature was the growing reliance of the U.S.A. railways on freight traffic as a source of revenue. In 1948 freight revenue was eight times the passenger revenue, and in 1956 nearly 12 times the passenger takings. Over these years revenue tons originated declined from 1,507 million to 1,447 million, or by nearly 4 per cent; though net ton-miles were down only 2 per cent because the average haul was 6.5 per cent longer. In the same period passenger journeys decreased by one-third from 642.8 million to 428·5 million, while passenger miles were down about 31 per cent, as the average journey of 66 miles on individual railways was two miles longer.

A disastrous slump in first class travel, by parlour or sleeping car, reduced the number of journeys by 40 per cent from 27,546,000 to 16,255,500. First class passenger miles declined at an even higher rate of 43 per cent, because the average journey in 1956 was 386 miles compared with 400 in 1948. An increase in the speed of all locomotive-propelled trains from 38 to nearly 42 m.p.h., with a lavish expenditure on "streamliners" by some of the principal railroads, failed to counteract the competition of subsidised domestic airlines for the higher class of passenger business, which earned for the railways $331·6 million in 1948 and only $213 million last year. This loss of 35 per cent went to swell the annual deficit on passenger train services, which grew from $559·8 million in 1948 to $696·5 million in 1956.

From time to time traders have represented to the Interstate Commerce Commission that freight rates were being advanced unduly to make good the loss on passenger train services. Certainly revenue per freight train-mile rose from $13·82 in 1948 to $19·34 in 1956, whereas revenue per passenger train-mile only increased from $3·23 to $4·06.

In March, 1956, the Commission instituted an investigation into the passenger deficit from all angles, including a review of its own formula for separating expenses between freight and passenger services. The inquiry makes slow progress—not a hopeful omen for its success in finding possible ways and means of reducing the deficit. Any allocation of expenses is open to carping criticism, but the President of the Pennsylvania Railroad, which worked some 800 passenger trains a day in 1956, stated in his annual report that in the case of his own company the Commission formula apportioned common expenses fairly and accurately.

Efficiency of Freight Traffic Operating

From 1948 onwards the curtailment of passenger train services left more paths open for the movement of freight. During the next eight years the railways withdrew passenger trains from 43,880 miles of road and today about half of the total railway mileage carries nothing but freight. In these years the general trend of freight traffic statistics was upward. By 1956 operating results might have been eminently satisfactory, but for an error of judgment in the lean year 1954 as to the need to maintain a stock of wagons adequate to meet requirements when industrial activity revived. At the end of 1956 the railways owned 1,706,840 wagons, 52,720 fewer than in 1948 and nearly 70,000 fewer than in 1953. Shortages at busy loading periods in 1955 and 1956 lost the railways traffic and some goodwill.

Good use was made of the wagons available in 1956, an average wagon load of 43·1 tons at starting point being 1½ tons larger than in 1948. A favourite gauge of wagon user in the U.S.A. —net ton miles moved in a serviceable wagon day—also improved slightly. Over the nine years the net train load rose by one-fifth from 1,176 tons to 1,420. At the same time freight train speed improved by nearly 15 per cent from 16·2 miles an hour between terminals to 18·6. These load and speed factors raised the hourly output of freight train operation by 42 per cent to an all-time high of 57,000 gross ton-miles; measured in net ton-miles, the hourly output was about 26,000. The significance of these figures can be judged from the fact that comparative results for 1929, a famous year in American railway history, were 24,540 gross ton miles and 10,580 net ton miles, produced by train loads of 804 tons, on an average, moving at 13·2 miles an hour. In less than 30 years freight operating was transformed.

Employees and their Remuneration

Developments in traffic movement inevitably affected the railways as employers of labour. In 1948 they had in their service 1,326,900 people of all grades from executives and general officers to coach cleaners and labourers. The aggregate remuneration of the staff was $4,769 million and the average annual payment to an employee was $3,590. By 1956 the number of employees was down to 1,042,660, a decrease of 284,240 or 21 per cent. Their aggregate remuneration of $5,325 million was $556 million, or 11 per cent, larger and the average annual payment to an employee increased by $1,513, or 42 per cent, to $5,107. The Pennsylvania Railroad, which employed about 100,000 people, paid out in salaries and wages 51 cents from every dollar it earned.

Such are the results of inflation run riot. For the seven months to July, 1957, the net railway operating income of the U.S.A. railways was 9·5 per cent lower than in 1956 and 16 per cent below the 1955 level. They will be compelled to economise in manpower; it is significant that a census of railway employees by States, taken for a period in mid-April, 1957, showed a total of 1,040,290. The largest number of railwaymen in any State was 94,580 in Pennsylvania. Illinois came second with 91,970 employees, of whom 65,000 work in the Chicago terminal district, served by 20 branch line railroads. That is claimed to be the busiest railway centre in the world, but 1956 was not a good year for the lines radiating from Chicago into the Western District and the going seems no better in 1957.

Halsskov-Knudshoved Ferry Route

Facilities for motorcar traffic on Danish State Railways services across the Great Belt

ON May 28, 1957, the Halsskov-Knudshoved motorcar ferry route of the Danish State Railways was opened. It is the second railway ferry route across the Great Belt between Zealand and Funen, the first route, between Korsor and Nyborg, having been opened in 1883. This earlier route carried railway traffic and motorcars. Since the war, traffic has grown considerably. Railway traffic increased because of the introduction of many new international trains, but this has been partly relieved by the opening of the Gedser-Grossenbrode route. The number of carriage and wagon axles carried by the ferry grew from 371,000 in 1930-31 to 897,000 in 1952/53. It has since fallen a little.

The biggest increase was in the number of motorcars carried. From 65,000 in 1930-31 the figure has risen to 575,000 in 1955-56. It is estimated that 1,000,000 motorcars a year will be carried in 1965 and 2,000,000 by 1980.

Motorcar traffic is especially heavy during the summer months and at Easter and Whitsun, reaching about 21,000 in one week in July compared with 5,000 a week in February. The traffic is especially concentrated at the weekends.

Easter Traffic

The Easter traffic has been the most difficult problem in later years, and there have been enormous queues and waiting times of up to 6 hr. In 1957, there were 13 ferries constantly in use, and delays on the first days were kept down to 3 hr. On Easter Monday, however, there was a 5-mile queue in Nyborg, and the waiting time in the afternoon and evening was 7½ hr.

The crossing between Korsor and Nyborg normally has seven railway ferries and three motorcar ferries, and to this was added the new double-deck motorcar ferry *Halsskov*, which can hold about 100 motorcars on each deck. The upper deck, however, could not be used until the Halsskov-Knudshoved route was opened.

In each of the two harbours there are three railway ferry berths and one motorcar ferry berth. It is quite impossible to arrange sufficient parking spaces near the harbours, and the sea entrance to Korsor harbour is by way of a channel nearly a mile in length, and to Nyborg through a fjord with many sand banks. It is therefore considered impossible to extend the ferry traffic based on these two harbours to any great extent.

The new crossing, between Halsskov and Knudshoved, is taking over most of the motorcar traffic, but the railway ferries still carry part of that traffic when space is available; at the peak times for motorcar traffic some of the railway ferries will be transferred to the new route and carry motorcars only. At night, when traffic is light, it is uneconomical to run a motorcar ferry service, and motorcars are therefore carried on the old route.

The new ferry route is 11¼ miles long compared with the 15½ miles of the older route, and the crossing time is reduced from 70 min. to 50 min. The ferries can therefore make one more round trip in a day. The two new harbours were originally intended to be built just outside the shore line, but investigations showed that the bottom outside Halsskov was too soft, so that the harbour had to be placed partly inside the shore line. The moles are built of stone with concrete quays superimposed. In each harbour there are two ferry berths, and there is sufficient space for building several more, if necessary. The quays are faced with steel sheet piling, and the concrete quays rest on this and wooden piles.

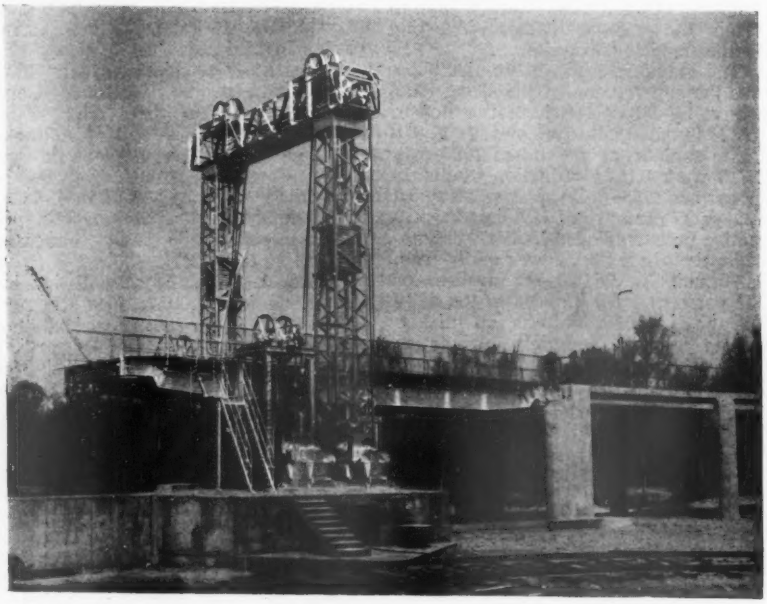
Between the quay and the wooden fender work buffers with steel springs have formerly been used, but the elastic intermediate link on these quays consists of 12-in. rubber blocks. The blocks have a 5-in. horizontal hole, so that they may be compressed up to 5 in. at a pressure of 20 *tonnes*. If the pressure rises above this, there will be a further, but smaller compression.

In each harbour area, spacious motorcar parks have been laid out. A motorcar comes first to the ticket control, with five traffic lanes, of which one has a weighbridge for lorries. Here the reservation ticket is inspected or issued if ferry space is available. The driver then is told to which of the 32 lanes in the parking area he is to proceed. The parking area will hold about 650 vehicles in all. The motorcars are sorted according to the ferry for which space is reserved. Loudspeakers are installed at the ticket control, in the parking area and at the ferry bridge to assist in giving directions to drivers.

The roads leading to and from the ferry berths are so arranged that the streams of traffic to and from the ferries do not intersect. There are two roads leading from the berths, and one of these is carried on a bridge over the road leading to the harbour. It is possible to empty a ferry in one of the berths and at the same time load a ferry in the other berth without interference. It is also possible to empty the lower deck of a double-deck ferry and at the same time load the upper deck—or vice versa.

One of the berths in each harbour is adapted to take double-deck ferries. The ferry bridge, forming the connecting link between shore and ferry, and the outer end of which may be moved up and down according to the tide, has two decks corresponding to those of the ferry. The lower deck is destined for buses, lorries, and other heavy traffic, the upper deck for motorcars.

(*Continued on page* 690.)



Double-deck connecting bridge giving access for motor vehicles to ferry steamers on the Halsskov-Knudshoved ferry route

RAILWAY NEWS SECTION

PERSONAL

Sir Michael Adeane, Private Secretary to H.M. the Queen, handed the insignia of the Order of Merit to Lord Waverley, Chairman of the Port of London Authority, in St. Thomas's Hospital, London, on December 8. Lord Waverley, who is 75, underwent an abdominal operation at St. Thomas's last August. He left the hospital in September and returned three weeks ago, suffering from pneumonia and pleurisy, from which it is understood that he is recovering satisfactorily. Also present at the ceremony were the Prime Minister and Lady Waverley. It is extremely rare for a recipient to receive the insignia of such an order other than from the hands of the Sovereign.

Mr. H. C. Johnson
Appointed General Manager designate, Eastern Region

Mr. G. W. Brown
Appointed Assistant General Manager, New Zealand Government Railways

Mr. H. C. Johnson, who, as recorded in our December 6 issue, has been appointed to succeed Mr. C. K. Bird as General Manager of the Eastern Region of British Railways, was educated at Bedford Modern School. He began his career with the former London & North Eastern Railway in 1923 as a Traffic Apprentice. In 1938 he was appointed Assistant District Superintendent, Cambridge, in January, 1940, he returned to London as Assistant to the Superintendent, Southern Area, in August, 1942, he became Assistant Superintendent, Southern Area, with chief responsibility for the Western Section, and in January, 1948, Operating Superintendent, Western Section, Eastern Region. During the last war he acted for a period as Railway Liaison Officer with Eastern Command on invasion preparations. From 1942 until 1955 he was closely concerned with the electrification between Manchester, Sheffield, and Wath. Since then he has had responsibility for the planning of other electrifications under the Modernisation Plan and the electrification extensions to Chelmsford and Southend (Victoria). Mr. Johnson became Chief Operating Superintendent, Eastern Region, in January, 1955. Later in the same year he was appointed Assistant General Manager (Traffic).

Mr. R. M. L. Lemon, Chief Assistant to General Manager, East African Railways & Harbours Administration, is arriving in London on December 11 on winter leave. He returns to East Africa on January 17.

Mr. Lewis T. Wright, General Secretary of the Amalgamated Weavers Association, was elected chairman of the British Productivity Council for the coming year at the Council's annual meeting recently. He succeeds Lord McCorquodale, a vice-president of the British Employers Confederation, who has retired after the customary year of office. Sir Miles Thomas, Chairman of Monsanto, is the new Deputy Chairman in place of Mr. Wright who is a member of the General Council of the Trades Union Congress. The meeting was held in the new T.U.C. headquarters and was the first occasion on which the Council has met there. Lord McCorquodale has agreed to continue as chairman of one of the Council's key committees.

Mr. G. W. Brown, who, as recorded in our October 4 issue, has been appointed Assistant General Manager of New Zealand Government Railways, began his railway career in 1925 as a clerical cadet at Christchurch. He subsequently served at Timaru and Wanganui Stations and, in 1930, was transferred to the Chief Accountant's office at Wellington. In 1949, after having held various positions in the Chief Accountant's office, he was appointed Internal Accountant & Audit Inspector for the Auckland district, where he remained until his return to Wellington in 1955 as Divisional Accountant. From February of this year until the date of his appointment as Assistant General Manager, he acted as Personnel Manager. A professional accountant since 1939, Mr. Brown is a member of the New Zealand Society of Accountants. In 1947 he was awarded a bursary to undertake a two-year course of study at Victoria University College, Wellington, to qualify for a Diploma in Public Administration. During the 1939-45 war he served in the Middle East with the New Zealand Railway Operating Group.

The British Association of Machine Tool Merchants has announced that Mr. Herbert Widdowson has been elected President and Mr. S. Plastock, Vice-President.

Mr. F. R. Murray, Transportation Superintendent of New Zealand Government Railways since the end of 1955, who, as recorded in our October 4 issue, is to have increased authority and who will control all the work of the traffic branch of the system, has had wide experience in railway transportation work in all its varied aspects. He began his railway career in 1922 as a clerical cadet at Christchurch, and later served at various stations in the North Island. In 1928 he was transferred to the Department's training school at Wellington, and a few months later was posted to the General Manager's office. From 1933 to 1936 he was stationed at Longburn, and from this station was promoted to the District Traffic Manager's office at Wellington, where he became Assistant Wagon Supply Officer on the outbreak of war in 1939. In this position he was one of the large team of officers who were given the responsible task of making the rolling-stock resources of the railways cope with the demands of a nation at war. Soon after his promotion to be Train Running Officer in 1947, Mr. Murray was appointed to the Transportation Superintendent's office where he was engaged on special duties. In November, 1952, he was appointed Senior Train Running Officer and, early in 1953, after acting as Assistant Transportation Superintendent for a short period, Assistant to the General Manager. It is this position that he now leaves.

Mr. F. R. Murray
Transportation Superintendent, N.Z. Railways, whose position has been enhanced

Mr. H. Z. Purchase
Appointed Inspecting Engineer (Mechanical & Electrical), New Zealand Government Railways

Mr. D. C. Baijal, Secretary, Indian Railway Board since January 16, 1956, has been appointed General Manager of the new Assam railway zone which is being set up with headquarters at Pandu. He has been succeeded as Secretary of the Railway Board by Mr. R. E. de Sa, Director, Civil Engineering (Standardisation) in the newly-integrated Research, Design & Standardisation Organisation, since March this year.

Mr. Charles Bayley has joined the Technical Sales Staff of the Solderless Connectors Division of Hellerman Limited.

Mr. H. Z. Purchase, who, as recorded in our October 4 issue, has been appointed Inspecting Engineer (Mechanical & Electrical), New Zealand Government Railways, joined that system in 1929 as an apprentice fitter-turner at Otahuhu Workshops, Auckland. In 1935 he was awarded a departmental scholarship. He subsequently qualified as both a mechanical and an electrical engineer and, in 1936, was granted two years' leave of absence to undergo a student apprenticeship course at the Bradford works of the English Electric Co. Ltd. On his return to New Zealand Mr. Purchase was posted to the Chief Mechanical Engineer's office at Wellington. Promoted to the position of Assistant Locomotive Engineer, he was employed chiefly in the drawing office on diesel railcar design. In May, 1947, he became Assistant District Mechanical Engineer at Wellington and, in 1950, District Mechanical Engineer, Wellington, the position he now leaves. Mr. Purchase is an Associate Member of each of the following Institutions: the Institution of Mechanical Engineers; the Institution of Electrical Engineers; and the New Zealand Institution of Engineers.

Mr. A. H. Moncrieffe, Assistant (Claims) Chief Commercial Manager's Office, North Eastern Region, British Railways, has been appointed Assistant to Commercial Officer (Sales) of that Region.

Under an amendment to the Government Railways Act, 1904-48, passed by the Western Australian Parliament during the current session, Mr. A. G. Hall, Commissioner, is now the sole administrator of the Department, subject to the Hon. Minister for Railways. Editorial reference is made in this week's issue.

Consequent on Mr. J. F. Perry's retirement from the board of the Metropolitan Vickers Electrical Export Co. Ltd., Mr F. R. Mason has been appointed Managing Director of that company and Mr. H. F. Bibby succeeds Mr. Mason as General Manager. Mr. F. R. Mason has also been appointed to the boards of Metropolitan-Vickers Electrical Co. Ltd. and Associated Electrical Industries Overseas Limited, two of the Group subsidiaries.

Mr. J. Chapman has been appointed Director & General Manager of Horstman Limited, a subsidiary of the Simms Group. This appointment follows internal changes consequent on the Group's acquisition of the Motor & Electronics Corporation. Mr. M. A. Hassid, Managing Director of Motor & Electronics Corporation, has been appointed to the board of Directors of Simms Motor Units Limited and to certain subsidiaries of the Group, including Horstman Limited.

Mr. W. E. Grainger

Appointed Assistant Divisional Traffic Manager, Barrow, L. M. Region

Mr. W. E. Grainger, District Motive Power Superintendent, Springs Branch, Wigan, London Midland Region, British Railways, who, as recorded in our November 22 issue, has been appointed Assistant Divisional Traffic Manager, Barrow, began his transport career with the former L.M.S. Northern Counties Committee at York Road, Belfast, as an apprentice in 1933. After serving his 5-year apprenticeship he gained experience at Wakefield Motive Power Depot, at Divisional offices at Manchester and Crewe, and at Headquarters at Euston. From 1941 to 1945 he was Running Shed Foreman at Crewe South, Swansea, Tebay, Plodder Lane, and Stirling. Mr. Grainger was appointed Mechanical Inspector at Glasgow in January, 1947, and, in 1948, became a member of the Motive Power Staff Commission for the Scottish Region. After serving as Locomotive Shedmaster at Motherwell and Kings Cross he was appointed in 1954 Junior Assistant in the Motive Power Superintendent's Office at Euston. A year later he became Assistant Motive Power Superintendent at Edge Hill. He was appointed District Motive Power Superintendent, Springs Branch, Wigan, in 1956.

Commander A. F. Mellanby, who, as recorded in our November 22 issue, has been appointed Senior Marine Officer, East African Railways & Harbours, joined the Administration on October 1, 1945, as a 2nd Officer Marine. Commander Mellanby was born at Birchington, Kent, and educated there and at Pettman House School, Margate. In 1939 he joined the Merchant Navy as a cadet and qualified as a Master Mariner. During the last war he was attached to the Royal Navy under T.124X regulations and served principally in landing ships with "G" force at Algiers and in Sicily and Italy. The force was moved to India in 1944 for the Burma landings where he was slightly injured. After hospital treatment he returned to the United Kingdom, later resuming duty.

Commander A. F. Mellanby

Appointed Senior Marine officer, East African Railways & Harbours

He was released from war service on October 1, 1945, and shortly afterwards left England for Kenya. In 1951 he became Commander Marine. During his service he has served both as Marine Officer and Commander at all the inland marine stations on the system, except Kigoma.

Improvements to Charing Cross Hotel

Restaurant enlarged: aperitif bar: new vehicle entrance

British Transport Hotels & Catering Services are at present engaged in an improvement scheme for the Charing Cross Hotel. The hotel is built above Charing Cross Station, Southern Region, and will be given greater prominence when the London County Council completes the scheme for widening the Strand.

As a result of reconstructional work, the restaurant has been enlarged and now has 50 additional seats. A new wine dispense has been incorporated in the service layout to facilitate easier working and the space formerly occupied by the original wine dispense has been converted into a small writing room and cloakroom for guests using the restaurant.

Aperitif Bar

The residents' lounge has been converted into an aperitif bar, panelled in pearwood. The appearance of the room has been enhanced by the introduction of red leather lambrequins. The bar is faced with brass-studded leather in shades of grey, green, and red. The lighting is by wall brackets with flame-coloured shades and concealed lighting has been installed in the centre dome of the room. A new false ceiling conceals the air extraction plant and refrigerated shelves are fitted in the bar service.

Among other improvements caried out is the forming of a mezzanine over part of the main kitchen, providing additional space for staff amenities and stores in the station refreshment room. The kitchen has been provided with improved refrigeration, meat preparation room, and office.

Other improvements include the building of a vehicle entrance into The Arches, which will reduce congestion in Villiers Street; improvements to the floor services; the remodelling of the ground-floor American Bar; and more private bathrooms. Builders' work is being carried out by R. W. Bowman Limited; steelwork by Moreland Hayne & Co. Ltd.; and painting by Grosvenor Decorations Limited and Gregory & Co. Ltd.

Aperitif bar in Charing Cross Hotel, showing part of false ceiling concealing air extraction plant

NEW EQUIPMENT AND PROCESSES

Small Mechanical Shovel

THE Microloda pedestrian-controlled mechanical shovel is designed to replace manual labour where bulk must be handled in a confined space. It is stated to be capable of doing the work of four men with wheelbarrows. It eliminates the actual physical work of shovelling and, as it is self-propelled, its individual loads of up to 3½ cwt. can be quickly transported to the desired place.

It is robust, despite its small dimensions, because of over-dimensioning of all important structural parts.

The shovel is simple to control; it is manœuvrable, and shock-free operation is achieved by the fluid flywheel transmission.

The Microloda is manufactured by F. E. Weatherill Limited, Welwyn Garden City, Herts.

Dimmer Control of Signalbox Fluorescent Lighting

FLUORESCENT lighting provides a convenient method of lighting railway signalbox interiors when the signalman is not required to look frequently out of the windows: a disadvantage is that it is difficult for signalmen to observe local traffic movements outside the box at night.

Despite measures which can be adopted in planning a scheme to reduce reflections in the windows, it has also been found advantageous in some recent installations to provide a dimming control by which the signalmen can adjust the lighting to suit their convenience in different conditions.

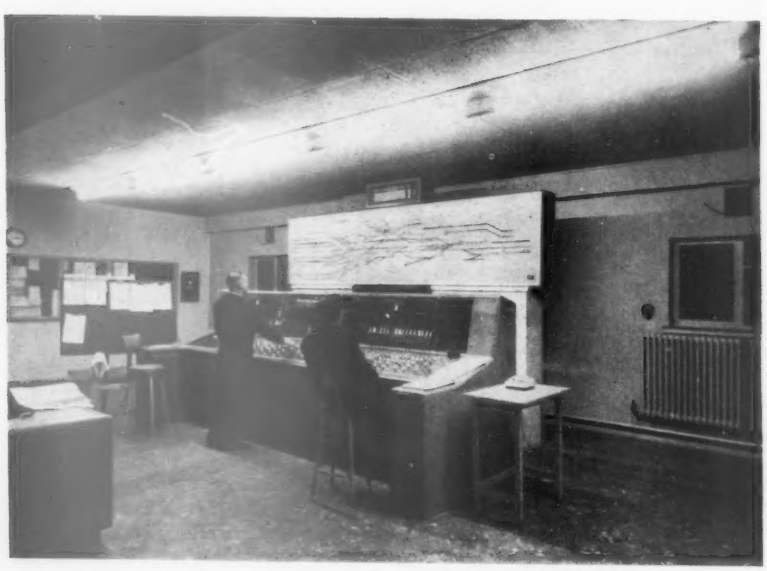
Resistance dimming as used with tungsten lamps is unsatisfactory for fluorescent tubes, since a definite minimum voltage is necessary to maintain the discharge. The various circuits which are used for dimming fluorescent tubes therefore control the tube current while maintaining a sufficient operating voltage.

The fluorescent lighting equipment supplied for the signalbox at St. Pancras, London Midland Region, includes a transductor system for dimming the five 5-ft., 80-W. tubes, which are mounted in a continuous line on the ceiling. An a.c. voltage variable from 0-60 V. is supplied from a double-wound Variac transformer to the five rectifier-transductor units, one for each tube; the d.c. from the rectifiers being applied to the transductor control windings. The main winding of each transductor is in series with its associated tube and serves as the choke, the maximum saturation being limited by the characteristics of the Variac. A dimming range of approximately 80:1 is available.

The Variac control and switches for the individual tubes are mounted on a panel in the operating room of the signalbox, with the five rectifier-transductor units immediately behind them in an adjoining room.

The illustration shows the interior of the St. Pancras signalbox in which the equipment has been fitted.

Further details of this equipment can be obtained from the manufacturer, the General Electric Co. Ltd., Magnet House, Kingsway, W.C.2.



Lightweight Spray Gun Fittings

TWO additional air nozzles for use with the Bullows-Binks Model 19 spray gun have been introduced. These units, which are suitable for wagon painting and general finishing of rolling stock, are intended to supplement the existing range of nozzles for the Model 19 gun. They are designed to give even greater scope where finish of the highest possible class, produced at high speed, is required.

The nozzles are the 63PB and 67SA. For use on pressure feed, the 63PB will operate with any of five material nozzles varying from 0·04 in. bore to 0·07 in bore. It is suitable for spraying the normal range of finishing materials from thin spirit or water stains to primers and heavy enamels. It is also complementary to the 66 PE nozzle, giving better results on certain materials.

The 67SA operates with the 67-material nozzle of 0·086 in. bore. This is designed for use with a syphon cup and is suitable for use with dope, heavy primers, fillers and cement paint. There has previously been no suitable suction type nozzle available for these "Group 2" materials.

Both nozzles are hard brass stampings with taper location on material nozzles to ensure permanent concentricity. All critical machining is done after plating. They are being manufactured by Alfred Bullows & Sons Ltd., Long Street, Walsall, Staffs.

Electronic Reading Machine

THE recently-invented Electronic Reading Automaton (ERA) is stated to be likely to have railway applications; one of these is that of reading information on the detail strips in automatic ticket issuing machines.

The following procedure is envisaged:—As the ticket is produced by the machine, a code number of the journey is printed on a continuous roll of paper in the mechanism. The reader would then read this roll and feed the information to a computer or to punch cards which would sort the information by the code numbers, and then total the number of tickets issued on each route. The speed of operation would be between 200 and 300 characters a second, so that if the code numbers were a four-figure code the machine would be able to cope with about 200,000 transactions an hour.

The reading machine also has applications to speed office procedure. The ERA is not affected by the unavoidable, typical defects of blurred, imperfect or misregistered type, and can be programmed to any of a wide variety of typefounts. It even absorbs some variations without reprogramming.

High reading speed characteristics are such that a sheet of double-spaced typed quarto is read character by character in 2 sec. The scanning is all-electronic; thus documents can be read while stationary or moving and the ERA can be programmed to any special sequence of "fields" on a document without corresponding mechanical shifting of the document.

The Electronic Reading Automaton is

manufactured by the Solartron Electronic Group Limited, Thames Ditton, Surrey, from which full details may be obtained.

Vertical and Overhead Welding Electrodes

AN all-position welding electrode, particularly suitable for vertical and overhead positions, has been introduced recently, with the trade name Vertivick. Designed for mild steel welding it is stated to retain all the essential features for downhand welding.

Vertivick electrodes can be used in the vertical and downhand positions at the current setting recommended for the vertical position, and all the normal positional welding techniques may be employed with confidence.

Additionally, as the arc length of the electrode is not critical, sound slag-free welds with excellent mechanical properties can be achieved, it is claimed, even by inexperienced welders.

These characteristics make the electrode particularly suitable where the current control may be remote from the operator which is often the case in constructional steelwork, and when welding inside tanks.

The versatile behaviour of the electrode is because the slag is sufficiently fluid, when welding vertically, to clear quickly from the molten pool, thus avoiding interruptions in the arc; also in the case of downhand welding, there is an absence of any tendency to flood the arc, even on medium rust or scaled plate.

Another feature of the electrode is stated to be the ease with which the slag can be cleaned from the root run of vee-butt welds; on subsequent runs it is often self-releasing.

It has a stable arc which is easily struck, and gives a smooth and regular weld appearance. Downhand fillets are flat in shape and show an excellent "wash-on." The electrodes are suitable for use with a.c. or d.c. (either polarity); with a.c., the electrode operates satisfactorily with open circuit voltage as low as 45.

They are available in seven sizes, $\frac{5}{32}$ and $\frac{1}{4}$ in. and 4 to 12 gauge, and have been approved by the Admiralty, Lloyds and the Ministry of Transport & Civil Aviation. The B.S. 1719 classification is E317.

Vertivick electrodes are being produced by the Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester 17.

Radiator Drain and Refill Unit

THE Type 1362ES equipment has recently been supplied for servicing diesel locomotive radiators in the North Eastern Region of British Railways.

The method of operation is by means of an air/hand operated diaphragm pump which is mounted on top of the rectangular storage tank. The suction and the delivery parts of the pump are interconnected, by pipework and change-over valves, so that it may be used for three purposes. These are: (a) to draw anti-freeze mixture from the tank of the unit and deliver it to a radiator; (b) to draw anti-freeze into the tank of the unit from a remote reservoir; and (c) to circulate vigorously the mixture within the unit by drawing it out of the tank, along the permanent pipework, and back into the tank.

The design of the air- or hand-operated pump enables one or the other to be selected by the simple movement of a sliding catch on the pump-operating spindle assembly. The operating handle can be removed from the pump, and stored on the unit, when air operation is required.

The mixture hose fitted to the unit is 10-ft. long. It terminates in a self-sealing coupling; the additional nozzle is fitted with the mating half of this coupling so that it can be removed from the hose without loss of mixture.

An extra half self-sealing coupling is supplied for attaching to a radiator that has to be drained; this can quite easily be attached to the coupling on the hose. 30 ft. of air hose is also supplied with the unit for connecting to an existing air supply. This should be either 80 or 150 lb. per sq. in.

The tank holds 50 gal. and is fitted with a 5-in. dia. covered filler orifice. The unit is based on two 16-in. pneumatic rubber-tyred wheels, and two 8-in. rubber-tyred swivelling castor wheels. Leading particulars of the Type 1362ES include: height, 4 ft. 6 in.; length, 3 ft. 9 in.; width, 2 ft. 3 in.

The price of the unit is £226 16s. It is marketed in the United Kingdom by Wakefield-Dick Industrial Oils Limited, 67 Grosvenor Street, London, W.1, from which further details can be obtained.

Pressure Feed Paint Spray Containers

THE redesigned versions of the manufacturer's 2- and 5-gal. pressure feed containers have now been introduced. These containers are designed for use in spraying large areas, in production work involving large quantities of material, and for spraying heavy bodied materials.

The 2-gal. size has high tensile aluminium alloy die castings for both body shell and lid, whereas the 5-gal. container has lids of this type but body shells of galvanised steel boiler plate. Attention has been paid to the seal between body and lid so that the possibility of leaking at this point has been virtually eliminated.

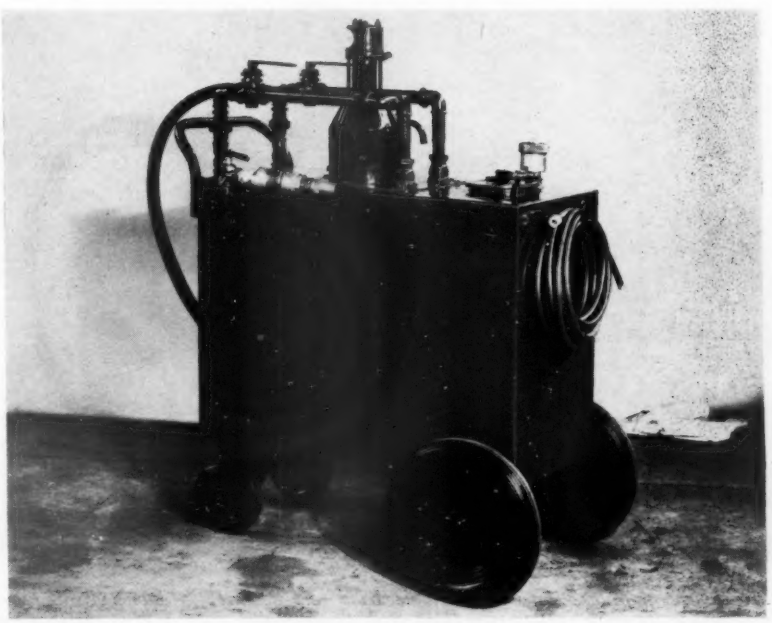
Both models are fitted with forged steel C-clamps and hand-screws enabling the lid assembly to be easily removed. On the 5-gal. size an additional quick-action filler cap is incorporated in the lid.

The reducing valve in both sizes of container is a piston type with no diaphragms to leak or need replacement. Sensitive and accurate in operation, it enables the pressure on the spraying material to be set and maintained by the operator to the correct requirement.

Equipment on the containers includes a pressure gauge in a housing shrouded against accidental damage, and a safety valve fitted with a ring for blowing off pressure before opening the container.

A special version of the 2-gal. unit without a reducing valve and pressure gauge is also available for use with spray guns of the "internal mix" type.

Details can be obtained from Hvmatic Engineerig Co. Ltd., Redditch, Worcs.



Improved Automatic Junction Working, L.T.E. Northern Line

Operation of junctions is from "programme machines" which set routes from a travelling punched reproduction of the timetable

As already described in our pages in connection with signalling installations brought into use of recent years, London Transport has been making increasing use of automatic point operation at junctions from controls coming from the information stored in the train describers. At Camden Town, Northern Line, this has been in use since September 1, 1955, and the latest installation at Cromwell Road, described in our issue of August 9, 1957, incorporates similar principles.

A further development has now been effected in the "programme machine," shown in the accompanying illustrations. In this the controls do not come, as in the earlier arrangement, from information recorded in the first instance by a signalman at a train describing point, but directly from the working timetable in the form of a punched travelling band made from Melinex sheet, the holes in which give complete information as to the destination, route and, if necessary, other characteristics of each train for the entire 24-hr. period.

Contact springs, which become operative electrically when opposite holes in the band, which itself moves forward step by step with the passage of the trains, act appropriately through relays on the signalling controls and so set up the correct route and clear the relevant signals for the train to which the record refers at a given moment.

If nothing occurs to make it necessary to interfere with the timetable order, the operation of a junction is effected entirely automatically from the machine. The record bands can be changed to cover Saturday and Sunday working, or other special requirements, such as bank holiday traffic. At the conclusion of the ordinary weekday 24-hr. service, however, the apparatus will rewind itself ready for the next day's one, if that is to follow a like order.

Deviation from Pre-Recorded Sequence

It is, of course, necessary to provide facilities for deviating from the pre-recorded sequence if some unusual circumstance necessitates it. For example, at a converging junction a train on one branch may be so much behind time as to render it essential to send one from the other line ahead of it. To permit that to be done the amount of lateness is registered, and if it is over a certain amount the machine sets the route for the other train to proceed; the details relating to the late one are stored to enable it to be signalled in due course without putting the machine out of step.

This apparatus is being brought into operation on January 12, 1958, at Kennington, as part of a re-signalling of the Northern Line, under which Euston and Camden Town eventually will be similarly controlled. The two machines at Kennington are being placed behind a window to enable passengers to watch them working.

Supervision is being vested in the Controller at Leicester Square—where each machine will have its duplicate moving in step with it—who will have an illuminated diagram of the line, a set of push-buttons for manual control of routes, and switches for putting the machines in and out of service. These switches will enable full automatic working to be followed normally, or if necessary the timetable to be departed from and train describer operation substituted, with "first come, first served" controls for converging movements. In case of need, all automatic working can be suspended and the routes set directly by the push-buttons.

Checking of Train Descriptions

The machines will check the train descriptions, sent from the termini as now, with the punched record, and if a discrepancy exists sound a warning buzzer in the control room. If no action is taken there the machine will, after 30 sec., set the route to the received description and not the timetable. If the description is, in fact, incorrect the Controller can, by a button, cause the train to be signalled according to the timetable in the normal manner. Any delay of over 2 min. also will be notified to the Controller.

Special facilities enable the record on the travelling band relating to a train which has had to be cancelled to be rendered inoperative and the next one to become effective at the right moment.

The details of the system have been worked out under the immediate direction of Mr. R. Dell, Signal Engineer, London Transport Executive.

Halsskov-Knudshoved Ferry Route

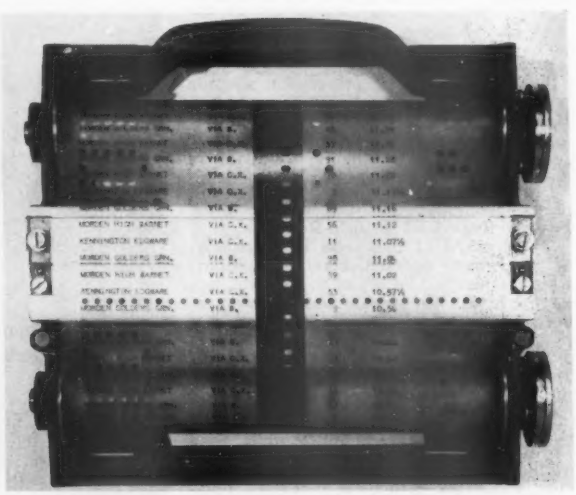
(*Concluded from page* 684)

The bridges are suspended by steel hawsers and are partly counterbalanced. The upper deck of the bridge may be moved up to 30 deg. from the horizontal. There is a centrifugal brake, which acts automatically when the movement of the bridge passes a certain limit, so that the bridge cannot fall even if the steel hawsers should part. The bridges are moved, each deck individually, by means of an electric, 15-h.p. motor, but both movements are controlled from a single platform. The bridges are 59 ft. long and carry a 10-ft. roadway.

From the upper bridge there is a ramp with a slope of 1 in 14. This ramp has been constructed so that the roadway from the lower deck may be led out below the first piers of the ramp from whence it diverges to one side.

At both harbours a main building containing offices, information bureau, restaurant, and quick-lunch restaurant has been erected. Both on Zealand and on Funen new motor roads have been built from the present main roads to the harbours, and a bridge to be built across the Great Belt will be placed near Halsskov and Knudshoved harbours, so that the new roads can be used as connections to the bridge.

Programme machine, showing timetable band and contact springs by which route setting is effected automatically



Punched roll removed from machine in container. Weekday, Sunday timings, and so on each have their roll

Accident at St. Johns, Southern Region

Third worst in the history of railways in Britain: 89 killed and 174 injured: bridge collapses on train in thick fog

One of the worst accidents in the history of British railways occurred in the Southern Region in the early evening of December 4, when, at about 6.20 p.m., the 4.56 p.m. steam passenger train from Cannon Street to Ramsgate collided heavily with the rear of the 5.18 p.m. electric passenger train from Charing Cross to Hayes. The collision took place at the country end of St. Johns station. The electric train was standing, with the brakes on, at a signal. Both trains were running late because of thick fog and were crowded with passengers. The steam train consisted of the locomotive and 11 coaches, and the electric train consisted of 10 coaches.

The collision occurred underneath the bridge carrying the Nunhead-Lewisham line over the main line. The locomotive of the steam train remained on the track, but the leading coach left the rails and knocked away a column supporting the bridge, two girders of which fell on to the first two coaches of the steam train, which was still moving. The rear coach of the electric train suffered little damage, but the two coaches ahead of it were telescoped and the body of one of them was swept away. The first three coaches of the steam train were crushed by the fallen bridge.

The driver of an electric train which was moving, slowly, on to the bridge above, stopped in time and the train was neither derailed nor damaged.

Difficulties of identification were made greater by mutilation, but the latest figures available as we went to press indicate that 89 passengers were killed, 110 seriously injured, and 64 less seriously injured.

Minister's Statement

In a statement in the House of Commons on December 5, given in full elsewhere in this issue, Mr. Harold Watkinson, Minister of Transport & Civil Aviation, paid tribute on behalf of the Government to the outstanding work at the scene of the accident of the emergency services and voluntary organisations, and also of those living nearby, who put their houses and possessions at the disposal of the rescuers. Rescue work was greatly hampered by the darkness and fog and by the ever-present possibility that the bridge would fall still further. The Ministry of Transport inquiry opened on December 12. The British Transport Commission has accepted full legal liability for compensation.

Emergency train services were run by the Southern Region, many trains starting from Victoria instead of Cannon Street or Charing Cross.

The accident ranks as the third worst on British railways, the number killed being exceeded only by the collision at Quintinshill on May 22, 1915, in which 224 people were estimated to have died, and the double collision at Harrow, on October 8, 1952, when 108 people were killed.

Messages of Sympathy

The Queen sent the following message to Mr. Harold Watkinson:—"The Queen and the Duke of Edinburgh are deeply shocked to learn of the railway disaster near St. Johns. Her Majesty would be grateful if you would convey her sympathy and that of His Royal Highness to the relatives of those killed and to the injured."

Queen Juliana of the Netherlands and Prince Bernhard sent the following message to the Queen: "Deeply shocked by the news of the terrible railway accident. We want to express to you and the bereaved families our feelings of warmest sympathy."

Sir Brian Robertson, Chairman of the British Transport Commission, and Members of the Commission issued on December 4 a statement expressing their deep regret at the accident and their sincere sympathy with the injured and bereaved.

Mr. Harold Watkinson sent a message to Sir Brian Robertson as follows:—"I have heard with deep regret of the railway disaster tonight near St. Johns. Please convey my deepest sympathy to the relatives of those involved."

Sir Brian Robertson replied to the Minister as follows:—"Am very appreciative of your sympathetic message. I will communicate it to the relatives of those involved."

On December 5, Sir Brian Robertson issued the following message:—"On behalf of the British Transport Commission I send my most sincere thanks to all doctors; nurses; police; firemen; voluntary services and other organisations; railwaymen and women, and members of the public who have given such willing and unremitting help at the railway accident at St. Johns."

Sir Brian Robertson went to the scene of the accident on December 5, accompanied by Mr. J. W. Watkins, Member of the Commission. The party also included Sir Philip Warter, Chairman of the Southern Area Board, Mr. C. P. Hopkins, General Manager, Southern Region, and Lt.-Colonel G. R. S. Wilson, Chief Inspecting Officer of Railways, Ministry of Transport & Civil Aviation. Mr. Harold Watkinson visited the scene on the same day.

Silencers for Southern Region Diesel Sets

An improvement is being carried out on the Southern Region six-car London-Hastings (via Tunbridge Wells) and two-car Hampshire diesel-electric sets; this is the fitting of silencers to reduce the noise level of the diesel engine exhausts.

These silencers are of the Burgess straight-through type and are bolted direct to the exhaust flange of the pressure-chargers. In this particular application, where space is restricted, the overall length of the silencers is 25⅛ in. The through pipe has a rectangular section of 3¼ × 11¼ in. It is constructed from 10-gauge perforated stainless steel and is 21 in. long.

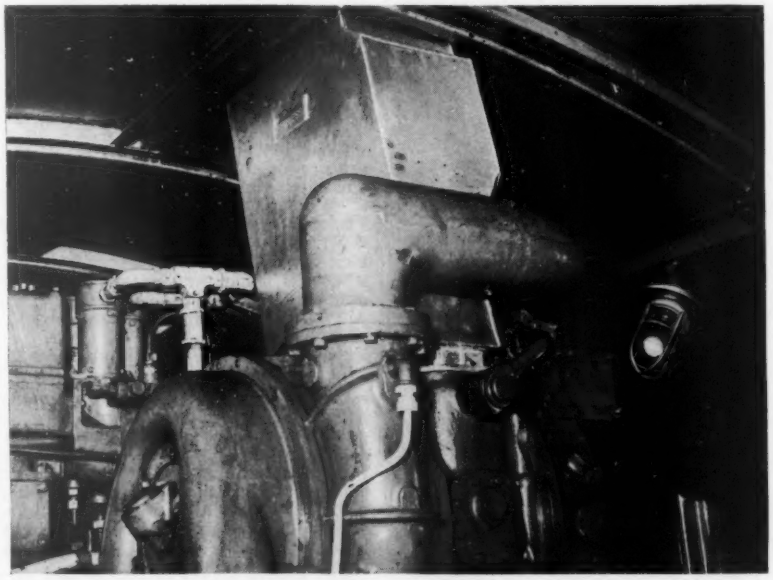
An outer cover, made from 10-gauge mild steel plate, retains a packing of stainless steel wool to a thickness of 2½ in. all round the through pipe.

As far as noise reduction was concerned, there were two problems. One of these was to remove or reduce a high-pitched "whistle" of approximately 5,000 c/s at idling speed; the other was to reduce, as much as possible, the actual exhaust noise on load at all engine speeds.

The former has, it is stated, been almost completely eliminated, and a reduction of 10-12 decibels has been obtained on the latter. The accompanying illustration shows the silencer in position between the turbo-blower and the engine-room roof.

The design and development of the silencers has been carried out by Burgess Products Co. Ltd., on behalf of the engine equipment manufacturer, the English Electric Co. Ltd.

GARRINGTON CONSTANT VELOCITY JOINTS.—The development, production, and sales of Garrington Constant Velocity joints are now being solely undertaken by the B.R.D. Co. Ltd., of Aldridge, Walsall, a member of the Guest, Keen & Nettlefold group.



Arrangement of Burgess silencer fitted to turbo-charger of Southern Region multiple-unit diesel trains

Parliamentary Notes

Railway Accident at St. Johns

Mr. MacDermott (Lewisham N.—Lab.) asked the Minister of Transport & Civil Aviation in the House of Commons on December 5 whether he had any statement to make concerning the rail crash on the previous night at Lewisham.

Mr. Harold Watkinson: Yes, Sir. At about 6.20 p.m. last night at the country end of St. Johns station on the South Eastern down main line, the 4.56 p.m. 11-coach steam passenger train from Cannon Street to Ramsgate collided heavily with the rear of the 5.18 p.m. 10-coach electric passenger train from Charing Cross to Hayes, which was standing at a signal with the brakes on. Both trains were running late because of fog, and they were crowded with passengers.

The collision occurred underneath the bridge which carries the railway from Nunhead to Lewisham over the main line. The leading coach of the steam train left the line of the track and knocked away a supporting column, dropping two of the steel girders of the bridge on to the first two coaches of the steam train, which was still moving.

The engine of the steam train was not derailed and there was not much damage to the rear coach of the electric train, but the two coaches ahead of it were telescoped together and the body of one of them was swept away. The three leading coaches of the steam train were practically demolished by the fallen bridge. An electric train which was moving slowly on to the bridge was stopped by its driver when he saw the trouble below and it was neither derailed nor damaged.

I deeply regret to say that the casualty roll in the crowded trains was very heavy. So far as it is known at present 76 people have been killed, including the guard of the electric train, and 193 injured, I am sorry to say 116 of them seriously.

I have appointed the Chief Inspecting Officer of Railways to hold an Inquiry into this accident, and I visited the site with him this morning. I am sure the House will understand that I cannot make any further statement on this matter at present.

I should like to take this opportunity of paying a tribute to the outstanding work done not only by the emergency services and the voluntary organisations, but also by those living near the scene who so unselfishly put their houses and their belongings at the disposal of the rescuers. The conditions in the dense fog and darkness were appallingly difficult and distressing, and there can be nothing but praise for all concerned who worked with such efficiency and determination throughout.

The House will, I know, wish to express its deep sympathy with the relatives and friends of those who lost their lives in this accident and with those who were injured. Sir Brian Robertson has also asked me to express his sympathy and that of the British Transport Commission, and to say that the Commission will accept full legal liability for compensation in connection with the accident and that all such claims will receive full and early consideration.

Lord Mancroft, Minister without Portfolio, interrupted a debate in the House of Lords on December 5 to make a similar statement to that made by the Minister of Transport & Civil Aviation in the House of Commons.

L.M.R. Electrification Poster

MANCHESTER – CREWE
ELECTRIFICATION
Major works are now being carried out in connection with the electrification of the main line between Manchester and Crewe. Some diversions as well as alterations to train timings between Manchester and the South and certain local services in the Manchester area will occur whilst these major works are in progress.
Details of train alterations will be published from time to time and notices and posters will be displayed at stations.
GETTING ON WITH THE JOB

Poster produced by the department of the Public Relations & Publicity Officer, London Midland Region, drawing attention to timetable changes and diversions caused by 50-cycle electrification

Questions in Parliament

Fenchurch Street-Tilbury Line

Mr. John Parker (Dagenham-Lab.) asked the Minister of Transport & Civil Aviation on December 4 what progress had been made with the electrification of the Tilbury line from Fenchurch Street.

Mr. G. R. H. Nugent, Parliamentary Secretary, in a written reply: The programme of preliminary works is up to schedule. The new marshalling yard at Ripple Lane should be completed by the end of 1958 and the remodelling of the junctions at Barking by the end of 1959. Other works are going ahead steadily.

Euston-Glasgow Electrification

Mr. Kenneth Robinson (St. Pancras N.—Lab.) asked the Minister of Transport & Civil Aviation on December 4 how the rephasing of capital investment in the railways modernisation programme would affect the Euston-Glasgow electrification scheme; and when he estimated that the Euston-Rugby section would be completed.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary, in a written reply: The scheme is unlikely to be affected and the estimate that the Euston-Rugby section will be completed in 1967 is unchanged.

Egyptian Delta Light Railway Claims

Mr. W. Teeling (Pavilion, Brighton—C.) asked the Secretary of State for Foreign Affairs on December 4 what was the present position of the British shareholders and debenture holders of the Egyptian Delta Light Railways; whether they were being looked after in the general settlement of claims and counterclaims; and what had happened to the two law suits brought in 1954 on behalf of the company's debenture holders.

Mr. Ian Harvey, Joint Under-Secretary of State for Foreign Affairs, in a written reply, stated that by Proclamation No. 5 of November 1, 1956, the Egyptian Government prevented British subjects from pursuing or instituting legal proceedings.

One of the objectives of the United Kingdom Delegation to the Anglo-Egyptian financial talks at present in progress in Rome is the removal of all Egyptian restrictive legislation against British subjects and property, including this Proclamation. The debenture holders would thereafter have the opportunity of deciding whether to resume litigation.

Staff and Labour Matters

Railway Wage Claims

A meeting of the Railway Staff Joint Council took place on December 12, at which the British Transport Commission representatives were due to give a reply to the claims of the three railway trade unions, the A.S.L.E.F., the N.U.R., and the T.S.S.A., for improved rates of pay and also for a reduced standard working week.

London Busmen's Wage Claim

A delegate conference of London busmen on December 9 rejected the advice of the executive of the Transport & General Workers' Union to submit their claim for a pay increase of 25s. a week to arbitration. The claim has been rejected by the London Transport Executive.

The conference is stated to have refused to go to arbitration because some members of the T.G.W.U. had lost faith in arbitration after recent Government statements. The busmen's representatives have been instructed to put the claim before the L.T.E. again.

If a pay increase is refused by the L.T.E. for the second time, the T.G.W.U. executive will be asked for plenary powers so that the busmen can "take steps to enforce the claim." If such powers were granted, any form of industrial action could be taken, including a strike.

A proposal by some delegates for a ban on voluntary overtime and voluntary rest-day working was outvoted by 90 votes to 34.

HOFFMANN MANUFACTURING CO. LTD. NEWCASTLE OFFICE.—The Hoffman Manufacturing Co. Ltd. has removed to larger premises in Newcastle-upon-Tyne, from 217, Westgate Road, to Rutherford Street (off Westgate Road), where a complete range of Hoffmann ball and roller bearings is carried. The new office and stockroom is under the Area Manager, Mr. W. N. Mills. The telephone number is Newcastle 23041/2.

WINTER PROTECTION FOR STABLED TUBE TRAINS.—London Transport has completed a concrete wall on the north-east side of the Piccadilly Line depot at Cockfosters. The wall is 500 ft. long and 11 ft. high. Its purpose is to protect trains stabled in the open from cold winds during the winter. At night cold north-east winds cause train equipment to freeze, and trains may be late entering service the following morning. Cockfosters depot, 384 ft. above sea level, is one of the most exposed on the Underground system. The decision to build a windshield there was taken after successful experience with special screens at Hainault (Central Line) depot.

Contracts and Tenders

Diesel-electric locomotives required for Australia

Maschinenbau Kiel A.G. (MaK), has received further orders from the F.C. Occidentales de Cuba for seven 600-b.h.p. four-axle diesel-hydraulic locomotives of 52 tons weight, and 11 units of 850 b.h.p. and 59/60 tons weight; and is at present delivering to the same railway eight 1,000 b.h.p. four-axle rigid-frame locomotives. All the above units have MaK engines and Voith transmissions.

The Soc. Alsthom is building 10 Bo-Bo-Bo diesel-electric locomotives for the narrow gauge section of the Algerian Railways, each powered by one M.G.O. quick-running oil engine of 1,100 b.h.p.

Emile Henricot, of Court St. Etienne, Belgium, has received an order for 24 one-piece cast steel bogie frames for the 12 1-Co-Co-1 diesel-electric locomotives of 2,000 b.h.p. which the English Electric Co. Ltd., is building for the 3-ft. 6-in. gauge Rhodesian Railways.

Siegener Eisenbahnbedarf A.G. (Seag), has received an order from the German Federal Railway for 72 multi-wheel pneumatic-tyre road-transporter wagons for carrying standard two-axle open and covered wagons on the road; and a repeat order from the Austrian Federal Railways for three road-transporters of the same general type.

The British Transport Commission, South Wales Dock, has placed the following contracts:—

Holst & Co. Ltd.: civil works contract in connection with electrification of No. 1 power station, Cardiff

Richard Costain Limited: construction of new pumping station and associated works, Kings Dock, Swansea

Yale & Towne Manufacturing Company: supply of two 8,000-lb. capacity fork lift trucks, Newport

General Engineering (Swansea) Limited: reconditioning of 42 spare dredger buckets.

British Transport Waterways has placed the following contracts:—

E. C. Jones & Sons (Brentford) Ltd., Brentford: one bantam pusher tug with 30-h.p. Parson's "Peregrine" air-cooled diesel engine

Darenth River Aggregates, Limited, Sunbridge, near Sevenoaks: one suction dredging plant for installation in existing boat

P. Kiernan, Leeds: construction of new lockhouse at Kippax, near Methley

May, Gurney & Co. Ltd., Norwich: bank protection work between Bow Locks and Old Ford, River Lee

A. E. Farr Limited, Westbury: construction of new lock at Ponders End, River Lee.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follows:—

From Australia:

20 diesel-electric locomotives, 800 h.p. to 1,000 h.p., complete and in running order to be delivered on rails to the nearest railway siding in New South Wales.

Tenderers may offer equipment to suit their standard types of locomotives which may be outside the specified horse-power range. The issuing authority is the Department of Railways, New South Wales. The tender No. is 2297. Bids should be sent to the Commissioner for Railways, Railway House, 19, York Street, Sydney. The closing date is March 5, 1958. Copies of the tender documents, including specification and drawings, are available on direct application to the Office of the Agent General for New South Wales, 56, Strand, London, W.C.2. The Board of Trade reference is ESB/29065/57.

From Portuguese East Africa:

6 shunting locomotives.

A provisional deposit of Esc:500,000 must be made by tenderers. The issuing authority is the Ports, Railways & Transport Department, Lourenço Marques. The tender No. is 4/58. The closing date is February 5, 1958. The Board of Trade reference is ESB/28791/57.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

The Director General, India Store Department, Government Buildings, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of axles, wheel centres, and tyres. See Official Notices on page 696.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the closing date of the call for tenders for diesel-hydraulic or diesel-electric locomotives for Costa Rica, reported on page 609 of our November 22 issue, has been postponed to January 2, 1958.

Notes and News

Automatic Wage Increases Proposed.—A proposal has been outlined by Lord Chandos for automatic wage increases of 2½ per cent each year for five years, a plan which he first put forward at the recent annual conference of the Institute of Directors, of which he is President. Mr. H. G. Brotherton, President of the Confederation of Shipbuilding & Engineering Unions, has said that the plan deserves discussion.

Italian Electric Train in Collision in Fog.—An electric express train which left Milan for Rome at 5.45 p.m. on December 9 collided with a motor lorry on a level crossing near Codogna, some 45 miles from Milan, in thick fog. Reports from Milan state that at least 15 people were killed and 50 injured in the accident. Several coaches were derailed, but the front coach, though very badly damaged, remained on the track and continued to run forward, colliding with the rear of a stationary train some 200 yd. away. The train is stated to have been travelling at speed.

Wagon Repairs Limited Proposed Issue.—Wagon Repairs Limited plans to issue 220,420 fully paid ordinary £1 shares early next year on the basis of one share for every £4 nominal of ordinary stock held. The consent of the Capital Issues Committee has been obtained. The new stock will rank pari passu with the existing ordinary stock but will not carry the right to participate in the interim dividend of 6d. a unit to be paid on January 10, 1958. An extraordinary meeting to approve the proposals will be held on January 30.

Jugoslav Railway Modernisation.—A report from Belgrade states that the Jugoslav State Railways are to spend 90,000 million dinars on railway modernisation in the next four years. This is equivalent to about £107 million.

Extension of Site Exchange Plan for Dorman Engines.—The site exchange plan for complete diesel engines manufactured by W. H. Dorman & Co. Ltd., Stafford, has now been extended to cover crankshafts, as well as cylinder blocks, cylinder heads, water pumps, and oil pumps. Full details of these new facilities, with prices, are contained in a pocket booklet which is being circulated to all Dorman engine users.

More Sleeping-Car Trains Proposed.—Mr. J. MacLeod, M.P. for Ross & Cromarty, has written to the British Transport Commission suggesting that more sleeper trains should be provided between London and Inverness in the peak holiday months. He states that the London-Inverness train journey is the longest in Britain, yet every night in the summer months there are between 30 and 40 people on the railway sleeper reservation lists who have no hope of getting berths. Last year tourism in Inverness and the North brought in a revenue of about £8 million. This sum, in his view, could be greatly increased if a full sleeper train were provided.

Railway Students' Association Annual Dinner.—Mr. A. H. Grainger, President of the Railway Students' Association and Deputy Chairman of London Transport Executive, took the chair at the Association annual dinner on December 4. After the loyal toast, he proposed that of "the ladies and visitors." Mr. G. F. A. Wilmot, Assistant for University Extension Courses, Department of Extra-Mural Studies, University of London, responded. Others present included two past Presidents of the Association, Sir Reginald Wilson and Mr. J. W. Watkins, both Members of the British Transport Commission; Mr. B. H. Harbour, Member of London Transport Executive; and a number of senior railway officers. The dinner was followed by dancing.

Entertainment to N.E. Region Holders of Civic Office.—Mr. T. H. Summerson, Chairman of the North Eastern Area Board, and Mr. H. A. Short, General Manager of the North Eastern Region of British Railways, recently entertained 16 railwaymen of the Region who are holders of civic office. They were supported by Regional officers, namely, Messrs. A. R. Dunbar, Assistant General Manager; F. H. Petty, Motive Power Superintendent; L. Sproat, Operating Officer; P. Stephenson, Establishment & Staff Officer; and G. H. Taylor, Assistant Carriage & Wagon Engineer. The holders of civic office were: Alderman E. L. Keld, Lord Mayor of York; Councillors G. E. Poppleton, Mayor of Pontefract; A. Crossley, Mayor of Gateshead; L. G. Turner, Mayor of Darlington; T. Breward, Mayor of West Hartlepool; J. W. Kennedy, Mayor of Blyth; G. T. Medcalf, Mayor of Goole; Alderman N. Garrow, Chairman, Northumberland C.C.; Councillor S.

Palphramand, Sheriff of York; Aldermen V. A. Bosworth, Deputy Lord Mayor of York; F. Windebank, Deputy Mayor of Hartlepool; Councillors R. W. Pumphrey, Deputy Mayor of Morley; C. Coultish, Chairman, Selby U.D.C.; G. A. Clarke, Chairman, Mirfield U.D.C.; H. V. Bennett, Chairman, Horbury U.D.C.; J. W. Corner, Chairman, Scalby U.D.C.

Dorada Railway Co. Ltd. Change of Name.—An extraordinary general meeting of the Dorada Railway Co. Ltd. was held in London on November 29, to pass resolutions changing the name of the company to Dorada Holdings Limited, adopting an amended memorandum and new articles of association, and reorganising the capital. Mr. P. A. V. Cooper, the Chairman, stated that the change of name to Dorada Holdings Limited was so that it would accord with the company operating as an investment company.

British Railways Demurrage Charges to be Increased.—The charges made by British Railways to traders for the detention of wagons and containers beyond the "free" period, basically one clear day, allowed for loading and unloading, are to be increased from January 6, 1958. They have remained unaltered since 1939. These charges are at present, with certain exceptions, 6s. per wagon or container per day after the initial free period. They will now be raised, again with certain exceptions, to 9s. per day for ordinary wagons and containers for the first two days after the free period, and to 18s. per day thereafter. Charges for special wagons and containers will be increased by broadly comparable amounts. Despite these increases, British Railways demurrage charges will still be the lowest made by any major railway administration in the world.

New Refreshment Room at Inverness.—A refreshment room comprising a cafeteria, licensed bar and lounge was recently opened at Inverness Station, Scottish Region. The new accommodation, which has direct access to the station concourse, replaces the former refreshment room, and has been built as part of the modernisation and improvement programme being carried out by British Transport Hotels and Catering Services. The room is divided into two sections of which the major portion forms the cafeteria. This has plastic lined walls, with random black terrazzo flooring, and is furnished with tables covered with check patterned plastic, and plastic upholstered chairs. The licensed bar is equipped with refrigerated shelving, a mirrored backing, and a wooden counter with a tangerine coloured top. Facing the bar is a carpeted lounge which, though partially segregated from the cafeteria by a plastic faced screen, has access to the remainder of the room.

Improved Services at Cannon Street.—The Southern Region announces after the bringing into use on December 15 of the new signalbox at Cannon Street, certain steam services, diverted to other stations for the past six months since the signalbox fire at Cannon Street, will run from and to that terminus from December 16. They include, in the down direction: (Saturdays only) the 12.45 p.m. and 1.15 to Ramsgate; and (Saturdays excepted) the 4.44 p.m., 5.14, and 5.44 to Ramsgate, and the 5.18 and 6.24 to Dover Priory. In the up direction the steam trains restored to Cannon Street include the 6.6 a.m., 6.29, 6.45, and 7.19 a.m. from Ramsgate, and the 7.9 from Margate, and (Saturdays excepted) 7.33 a.m. from Ramsgate, 8.8 from Hastings, and 8.20 a.m. from Herne Bay. Certain electric trains run as a temporary measure on Mondays to Fridays from Cannon Street to Gillingham and from Chatham and Sevenoaks to Cannon Street, will be simultaneously withdrawn.

Railway Club Annual Dinner.—The annual dinner of the Railway Club was held at the Danish Club, London, on November 29. The President, Mr. Kenneth Brown, was in the Chair; supported by the three Vice-Presidents, Messrs. C. E. Lee, D. S. M. Barrie, and T. S. Lascelles; the Hon. Secretary, Mr. B. D. J. Walsh; and the Hon. Treasurer, Mr. Arnold Roose. The guests included Messrs. G. J. Aston and L. C. Johnson, and the attendance of 68 was a record. During the evening, Mr. Brown announced that he would be retiring from the office of President at the annual general meeting in February next. To mark the occasion, he presented to the Club a crest of the London & Birmingham Railway, carved in wood. This was accepted, on behalf of members, by Mr. Walsh, who paid a tribute to the services rendered to the Club by Mr. Brown during nearly 30 years of office. The toast to the officers and committee was proposed by Mr. G. F. Davies and Mr. H. A. Vallance replied. Mr. J. G. Spence proposed the toast of "The Guests" to which Mr. L. C. Johnson replied. Mr. M. D. Greville proposed the toast of the Danish Club, to which Mr. S. R. Honey replied.

John I. Thornycroft & Co. Ltd. Results.—The ordinary dividend of John I. Thornycroft & Co. Ltd., engineers and shipbuilders, is maintained at 12½ per cent with a final payment of 9 per cent against 7½ per cent previously. Group net profits for the year ended July 31, were £433,443, against £344,751 in 1955-56, after providing £393,317 (£315,597) for tax.

Improvements at Bushey & Oxhey.—Work began on November 12 on a £10,000 improvement scheme at Bushey & Oxhey, a dormitory station on the Euston-Watford line of the London Midland Region. The improvements include two new waiting shelters, with toilets, on the main-line platforms. These will be of modern design in prefabricated timber and will replace two temporary open-fronted structures. The two staircases leading to the subway linking platforms 5 and 6 are to have overhead coverings and side walls. It is expected that the work will be completed within 16 weeks.

Radio Telephones in Parcels Vans.—British Railways, North Eastern Region, have installed radio telephone apparatus at Leeds Parcels Depot and in six C. & D. vehicles, with the object of conducting large-scale experiments. The equipment is now in operation. During the working day, as traders' requirements become known, messages can be passed direct to the vehicle drivers working in the vicinity of any particular firm or firms. This will be of particular benefit to traders with urgent traffic which needs to be picked up at their works at short notice.

Trade in Scotland.—British Railways television train, which was specially fitted out as a travelling trade exhibition, recently completed at St. Enoch Station, Glasgow, a tour of some 450 miles of the principal cities and a number of the important towns in Scotland. Mr. Maurice B. Links, Joint Director of A. Links & Co. Ltd., Glasgow, who chartered the train for a week, paid tribute to British Railways at a press conference in Glasgow and outlined plans for a similar exhibition by the television train in England. At the same time he indicated that his company was planning ahead to introduce the idea on the Canadian railways in the spring of 1958 for the display of Scottish manufactures throughout Canada.

B.P. £41,000,000 Stock Issue.—The prospectus of an offer by the British Petroleum Co. Ltd. of £41,000,000 of 6 per cent convertible debenture stock, 1976/80, at £99 per cent, was published last Friday. Applications opened and closed last Wednesday. The original intention was to make an issue of some £50,000,000, but this was scaled down by the Capital Issues Committee. Holders of the new stock will have the right of conversion

Interior of cafeteria at Inverness Station; with licensed bar and lounge to the right

to fully-paid ordinary £1 shares during the period July 1-31 in 1958, 1959, and 1960. Units of £50 of stock may be converted into 10 ordinary shares in 1958 and 1959, and in 1960 into eight ordinary shares. Payment of the issue is on the basis of £10 per cent on application, £10 on allotment, £40 on March 14, 1958, and £39 on May 1, 1958. The stock will rank pari passu with the existing £18·2 million first debenture issue.

All-in Tours to Ireland.—Plans are in hand to repeat next summer the all-in tours to Ireland which were introduced for the first time this year by British Railways in conjunction with the Creative Tourist Agents' Conference and Coras Iompair Eireann. There were 379 bookings via Holyhead and 198 via Fishguard. These all-in eight-day tours will start in May. Departures are on Tuesdays from some 24 selected stations in England and cover six different holiday centres and a choice of two circular motorcoach tours in Ireland. Train and sea journey, meals en route, hotel accommodation, sightseeing trips, and gratuities are included in the charges, which range from £20.

New Signalbox at Sandbach.—A power-operated signalbox is to be built at Sandbach in connection with the London Midland Region Manchester - Crewe electrification scheme. To accelerate construction, prefabrication principles will be employed. The box will be largely factory built and delays on site caused by bad weather will be reduced to a minimum. It will control the line from Crewe (exclusive) to Goostrey. Thereafter another box of similar design is to be built at Wilmslow. The Sandbach box will be brought into use in mid-1959. Signalling will be colour-light with electro-pneumatically operated points and continuous track circuiting.

British Railways Claims Prevention Campaign.—British Railways are to carry out a claims prevention campaign among their staff with the object of further reducing damage to goods in transit. A series of 15 posters in colour, designed by Bruce Angrave, will show pictorially how this can be done. The posters will be displayed on staff notice boards in all six Regions at two-weekly intervals. The series will cover consignment notes, examination of wagons, cleaning of wagons, correct loading and unloading, clear labelling, care of fragile goods, rejection of packages unfit for transit, keeping goods and empties dry, and careful shunting. A British Transport Commission film "Safe Transit," which deals with the correct handling of goods, is also being shown to members of the staff throughout the country as part of this campaign to reduce claims. During the nine years 1948-1956, the amount paid out by British Railways on claims from all causes on goods and passenger traffic has been reduced from more than £4 million to less than £2 million. Despite this very considerable decrease in the number of claims there is an urgent need for a still greater reduction, and the new series of posters is intended to educate railway staff in the more careful handling of customers' goods.

New Booking Office at Irlam.—Work has been started at Irlam, between Manchester Central and Warrington on the Manchester - Liverpool main line of the former C.L.C., by the London Midland Region on the foundations of a new booking office and waiting-room. This is part of a replacement and improvement scheme after alterations made to the station layout when additional sidings for the Lancashire Steel Corporation were recently provided there. The scheme includes new toilets and covered staircases to the subway. It is expected to be completed by next April.

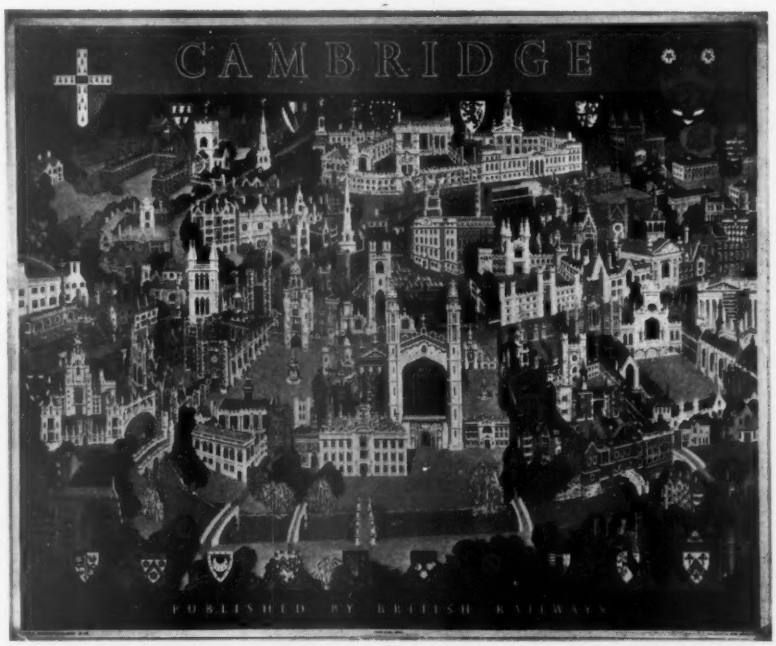
The first of a series of 15 *posters being issued by British Railways as part of a claims prevention campaign*

Antofagasta (Chili) & Bolivia Railway Co. Ltd.—An unchanged ordinary dividend of 4 per cent is announced by the Antofagasta (Chili) & Bolivia Railway Co. Ltd. After taking into account the balance of £796,319 brought forward from 1955, and deducting debenture interest, tax provisions, renewals, and social laws in South America, and the dividend on the 5 per cent cumulative preference stock, there was a credit balance on the net revenue account for 1956 of £971,020. Net earnings have declined in the current year, and the company is stated to have been operating at a loss in Bolivia for some months.

Inter-City Helicopter Services.—At the opening of a British European Airways exhibition in the Baltic Exchange, Mr. A. H. Milward, Chief Executive of B.E.A., stated that the corporation still planned to use helicopters for inter-city services if they turned out to be commercial propositions. The new Fairey Rotodyne aircraft could easily be the answer and enable such services to be provided.

Canadian Trade Mission Visit Leyland Motors Limited.—Members of the Canadian Trade Mission who are touring British industries to investigate the possibility of importing more products from Britain, visited three of the five factories of Leyland Motors Limited, at Leyland, Lancashire, last week. Sir Henry Spurrier, Chairman & Managing Director of the company, welcomed the visitors when they arrived at Leyland from Manchester in a Leyland "Worldmaster" motorcoach.

Eastern Region Poster Featuring Cambridge.—The poster shown in the accompanying illustration is by Kerry Lee and was produced by John Waddington Limited to the requirements of the Public Relations & Publicity Officer, Eastern Region. It is printed in 12 colours and features the colleges of Cambridge. Some 5,000 copies have been produced and they are to be displayed throughout British Railways.



Poster produced to the requirements of the Public Relations & Publicity Officer, British Railways, Eastern Region; the view shows most of the notable buildings in Cambridge, looking north-east

Forthcoming Meetings

December 13 (*Fri.*).—Institution of Mechanical Engineers, at 1, Birdcage Walk, Westminster, S.W.1, at 6 p.m. James Clayton lecture on "High pressure hydraulic transmission," by Dr. Ing. Hans Thoma.

December 13 (*Fri.*).—Institute of Transport, Northern Section, at the Royal Station Hotel, Newcastle-upon-Tyne, at 7 p.m. Paper on "The history and work of the Railway Inspectorate, Ministry of Transport & Civil Aviation," by Brigadier C. A. Langley.

December 14 (*Sat.*).—Railway Students' Association. Visit to Eastleigh, Southern Region. Leave Waterloo at 8.30 a.m.

December 15 (*Sun.*).—Railway Correspondence & Travel Society, annual reunion in Birmingham, at the Queen's Hotel (Warwick Room), from 2.15 to 7 p.m. The principal speakers will be Mr. L. M. Sayers, Assistant General Manager, L.M.R., on "The railwayman's lot"; Dr. M. J. Wise (London University) on "Canals, railways, and the growth of the West Midlands Connurbation"; and a showing of recent films by Mr. P. B. Whitehouse.

December 16 (*Mon.*).—Railway Correspondence & Travel Society, Northampton Branch, at the Liberal Club, Castilian Street, Northampton, at 7.30 p.m. Paper on "L.M.S. miscellany," by Mr. L. Hanson.

December 16 (*Mon.*).—Institute of Transport, at 80, Portland Place, London, W.1, at 5.45 p.m. Annual general meeting of Corporate Members.

December 17 (*Tue.*).—Joint Meeting of the Institutions of Civil, Mechanical and Electrical Engineers, at the Institution of Civil Engineers, Great George Street, Westminster, S.W.1, at 5.30 p.m. (tea will be served at 5 p.m.). Fourth Graham Clark lecture: "The engineer and management," by Sir Ewart Smith.

December 17 (*Tue.*).—Institute of Transport, Scottish Section, at 46, Bath Street, Glasgow, at 6 p.m. Paper on "Selling transport—with particular reference to British Railways," by Mr S. E. Raymond.

December 18 (*Wed.*).—Permanent Way Institution, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road, N.W.1, at 6.30 p.m. Discussion: "Long welded rails," initiated by Messrs. A. E. Boarder, F. Fawcett, W. C. Labraham, and I. G. White.

December 18 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, Westminster, S.W.1, at 5.30 p.m. Paper on "American experience as a guide to main-line diesel locomotive application overseas," by Mr. H. G. McClean.

December 18 (*Wed.*).—Society of Chemical Industry Corrosion Group, at the Society of Chemical Industry Headquarters, 14, Belgrave Square, London, S.W.1, at 2.30 p.m. A discussion on "Teaching corrosion science."

December 18 (*Wed.*).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, London, W.C.2, at 6.15 p.m. Paper on "Coal and transport," by Mr. W. L. Kelly, Assistant Director of Marketing (Transport), National Coal Board.

December 19 (*Thu.*).—Diesel Engineers & Users Association, at Caxton Hall, Westminster, S.W.1, at 2.30 p.m. Paper on "Report on heavy oil engine working costs and performance 1956/57," and an informal discussion on "Operating problems."

Railway Stock Market

Stock markets have been unresponsive to many good company results, due partly to the usual end of the year decline of business which has been accompanied by renewed fears of a fresh decline on Wall Street. There now seems considerable uncertainty whether there will be a reduction in the bank rate in the early part of the new year. Moreover, sentiment has been affected to some extent by talk that political developments might bring the possibility of a general election in 1958. The latter was one reason why steel shares failed to respond to the good financial results and higher dividends. Some of the higher dividends were, however, attributed to the likelihood that several steel companies will have to raise additional capital before long.

Foreign rails have been influenced by the uncertain trend in stock markets and were generally at the same levels as a week ago.

Canadian Pacifics, however, had a steadier appearance, but eased later, and at $47¼, compared with $47¼ a week ago. In fact they are now at the lowest level recorded this year, though there is general confidence that the 7 per cent dividend is likely to be maintained, and on this basis the yield at the current price is fully 6¾ per cent. Incidentally the company's other stocks offer generous yields, that on the 4 per cent non-cumulative preference, which is quoted at £56¼, being over 7 per cent, while the 4 per cent debentures, now £62¼, yield 6⅜ per cent. Elsewhere, White Pass shares have changed hands around $14½.

Antofagasta, which remained at 20½, give a yield of more than 19 per cent on last year's 4 per cent. dividend. Even if the dividend were halved, the yield at the current price would be over 9½ per cent, and it can be argued that this stock is undervalued and is therefore likely to respond readily in price when markets rally. Moreover, Antofagasta preference stock, which has improved fractionally to 37¼, yields as much as 13 per cent, and there is, of course, every reason to expect the 5 per cent dividend to be maintained.

Brazil Railway bonds have strengthened from 5 to 5¼, and in other directions, San Paulo Railway 3s. units were again 2s. 1½d., Taltal shares transferred at 15s. 9d.

Elsewhere, business at 37 was recorded in Chilean Northern 5 per cent debentures. Costa Rica ordinary stock was again 16½. There was a slightly better tendency in United of Havana second income stock, which at 7¾, compared with 7 last week. Mexican Central "A" debentures strengthened from 70½ to 71.

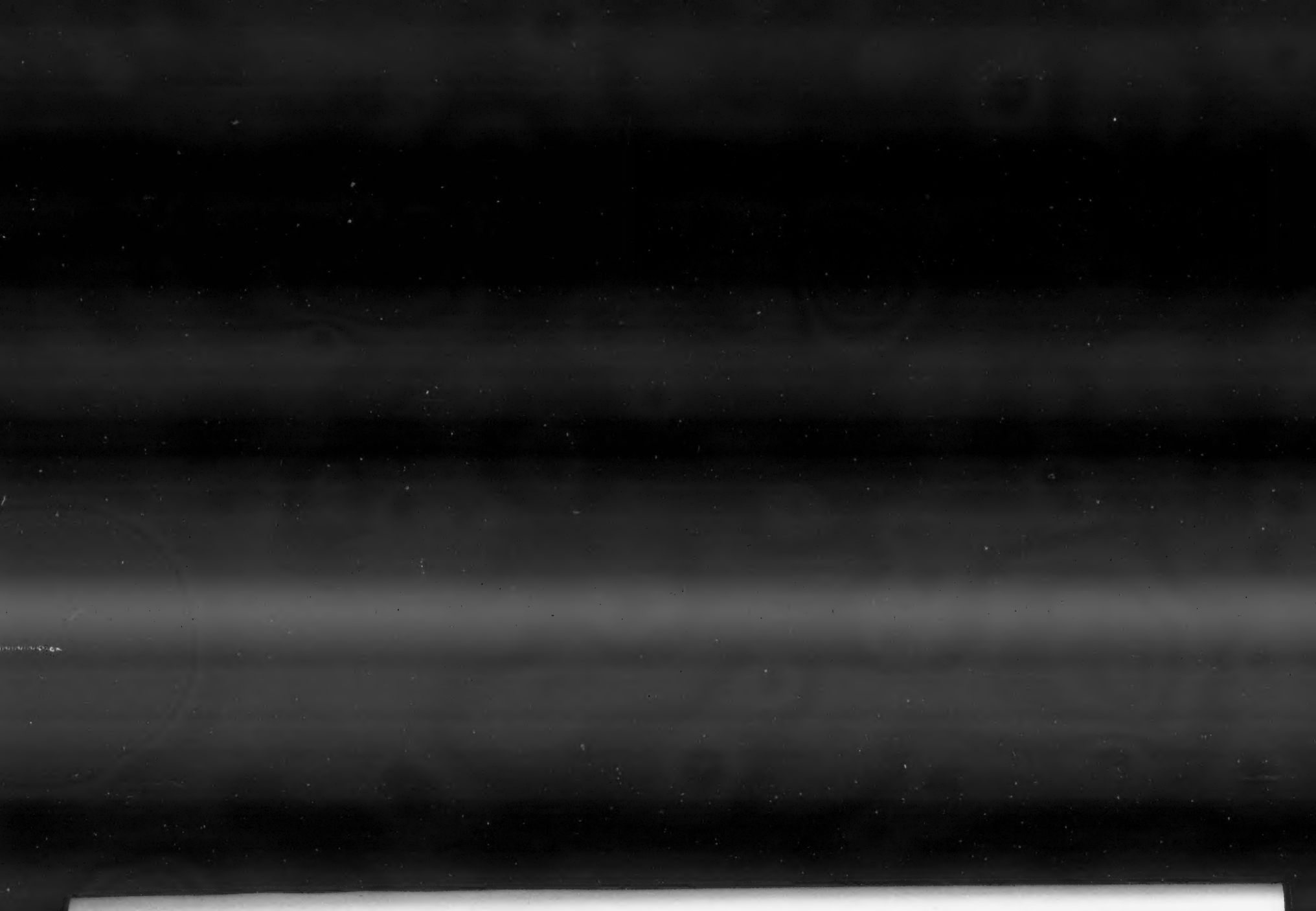
The shares of locomotive builders and engineers reflected the uncertain trend in the engineering section generally, and movements as compared with a week ago were small. Hurst Nelson remained at 25s., but North British Locomotive eased from 13s. 6d. to 13s. 3d. and Westinghouse Brake from 32s., a week ago to 31s. 9d. On the other hand, Birmingham Wagon firmed up from 15s. 1½d. to 15s. 4½d.

Among other shares, however, Tube Investments came back from 55s. 3d. to 54s. 6d. but Wagon Repairs 5s. shares rose from 12s. 6d. to 13s. and Gloucester Wagon 10s. shares held steady at 14s. Ransomes & Rapier 10s. shares moved up to 18s. and Newton Chambers advanced from 43s. to 47s. 6d. under the influence of the news that negotiations for a merger have started. It cannot be forecast when the talks will be concluded, but the directors have advised shareholders not to dispose of their holdings. F. Perkins 10s. shares remained at the lower level of 10s. 1½d. recorded a week ago. Pressed Steel 5s. shares at 14s. 3d. have been well maintained. Moreover, elsewhere, British Timken strengthened from 51s. 3d. to 51s. 9d., but Ruston & Hornsby eased from 23s. 6d. to 22s. 9d.

OFFICIAL NOTICES

THE NIGERIAN RAILWAY CORPORATION invites applications for the following post: SIGNAL INSPECTOR. *Duties:* The Signal Inspector will be responsible for the Signalling apparatus in a Railway district. He will also be required to undertake the installation of Double Wire Signalling apparatus. *Qualifications:* Candidates, aged not less than 28 years, must have a sound technical and practical experience in the construction, installation, repair and maintenance of mechanical signalling apparatus, including the construction and installation of Double Wire Signalling equipment. They must have served their time in the Signal Department of a first class railway, or a signal manufacturing company. A knowledge of the design and working of Electric Train Staff Instruments and Telephone Train Control apparatus would be an asset. Candidates should be members of the Institution of Railway Signal Engineers or qualified as Associates. *Salary:* In scale £700 by £50 per annum to £1,200 per annum plus £300 per annum Overseas Pay. Starting salary according to qualifications and experience. Appointments on contract with 20 per cent. gratuity per annum of total pay or on pensionable terms. *Tours:* 15 months in Nigeria followed by 15 weeks' leave on full pay. *Quarters:* Partly furnished quarters are provided at low rental. *Allowances:* There are attractive family, travelling, transport and other allowances. Send postcard before 23rd December, 1957, mentioning the post and this paper for further particulars and application form to: The London Representative, Nigerian Railway Corporation, Nigeria House, 9 Northumberland Avenue, London, W.C.2.

FOR SALE OR HIRE, Hudswell Clarke 0-6-0 standard gauge STEAM LOCOMOTIVE, in good condition.—Apply Eagre Construction Co. Ltd., Scunthorpe, Lincolnshire. 'Phone 4513 (7 lines).

THE Director General of India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of: B.G. ROLLING STOCK: 168 AXLES, rough turned; 96 WHEEL CENTRES, TYRE and TYRE FASTENING RING; 48 WHEEL CENTRES; 240 TYRES. Forms of tender may be obtained from the above address on or after the 13th December, 1957, at a fee of 10s., which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Thursday, 23rd January, 1958. Please quote Reference No. 95/57.

THE NIGERIAN RAILWAY CORPORATION invites applications for the following post: ASSISTANT WORKS MANAGER (LOCOMOTIVE). *Duties:* The Assistant Works Manager (Locomotive) under the jurisdiction of the Works Manager, will supervise the Locomotive Workshop Foremen and the Progress and Inspection Department. *Qualifications:* Candidates must have served an apprenticeship in a first-class Locomotive Workshop, with at least two years' subsequent experience in the organisation and administration of a Railway Locomotive Workshop. Candidates must have had experience of a Drawing Office and production methods. Carriage and Wagon building and maintenance experience is desirable. For appointments on pensionable terms, age limits 26-45 years and candidates must possess A.M.I.Mech.E. or have passed Parts I and II (or equivalent). For contract terms, age limit 55 years and professional qualifications may be waived if compensated by wide experience. *Salary:* In scale £800 by £50 per annum to £1,600 per annum plus £300 per annum Overseas Pay. Starting salary according to qualifications and experience. Appointments on contract with 20 per cent. gratuity per annum of total pay or on pensionable terms. *Tours:* 15 months in Nigeria followed by 15 weeks' leave on full pay. Quarters: Partly furnished quarters are provided at low rental. *Allowances:* There are attractive family, travelling, transport and other allowances. Send postcard before 24th December, 1957, mentioning the post and this paper for further particulars and application form to: The London Representative, Nigerian Railway Corporation, Nigeria House, 9 Northumberland Avenue, London, W.C.2.